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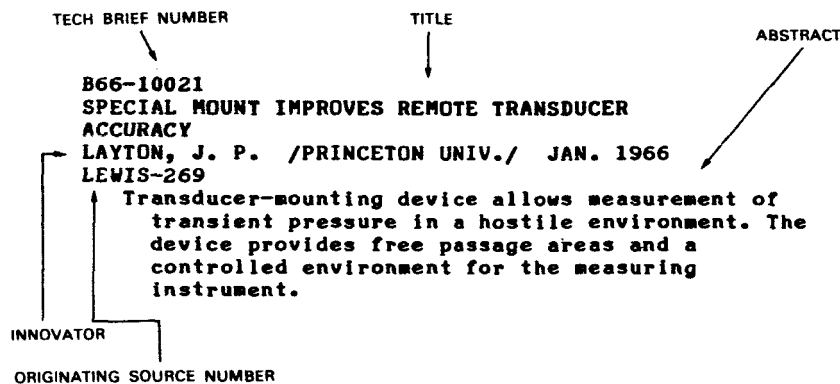
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National Aeronautics and Space Administration

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Introduction

This *Index to NASA Tech Briefs* lists the technological innovations published in this form during the period from January through June, 1966. The main section is arranged in five categories: Electrical (including Electronic); Physical Sciences (Energy Sources); Materials (including Chemistry); Life Sciences; and Mechanical. A typical entry has these elements:



To help users locate information of value, three indexes are provided. The first is a subject index, arranged alphabetically:



Note that in this index several routes are opened for obtaining further information. If the title seems promising, the Tech Brief number and category may be used to locate the abstract, which will be found in the main section arranged sequentially by Tech Brief number

within each category. Further, the Tech Brief number can of course be used for obtaining a copy of the original Tech Brief.

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01 ELECTRICAL (ELECTRONIC)

B66-10002

DUAL-VOLTAGE POWER SUPPLY HAS INCREASED EFFICIENCY

STURMAN, J. C. JAN. 1966

LEWIS-107A

Simple circuit provides two different dc output voltages from an ac source. It employs a full-wave rectifier connected to two passive branches from which the separate dc voltages are taken. The outputs have low ripple and good voltage regulation.

B66-10006

COMPUTER CIRCUIT CALCULATES CARDIAC OUTPUT

MC CULLOUGH, C. E. /KAMAN AIRCRAFT CORP./ JAN. 1966

MSC-274

Electronic circuitry automatically calculates cardiac output. This computer is used for basic research in physiology and as a diagnostic instrument by doctors.

B66-10012

THIN-FILM SEMICONDUCTOR RECTIFIER HAS IMPROVED PROPERTIES

INNOVATOR NOT GIVEN /MELPAR/ JAN. 1966

MSC-207

Cadmium selenide-zinc selenide film is used as a thin film semiconductor rectifier. The film is vapor-deposited in a controlled concentration gradient into a glass substrate to form the required junctions between vapor-deposited gold electrodes.

B66-10013

REACTION HEAT USED IN STATIC WATER REMOVAL FROM FUEL CELLS

PLATNER, J. L. /ALLIS-CHALMERS MFG. CO./ JAN. 1966

M-FS-532

Reaction heat is used for removal of water formed at the hydrogen fuel electrode in a hydrogen-oxygen fuel cell. A portion of the heat inherent in the fuel cell current generation reaction is used to transform excess water into water vapor and cause it to be exhausted from the cell by a porous vapor transport membrane adjoining a vapor cavity.

B66-10015

ELECTRODELESS DISCHARGE LAMP IS EASILY STARTED, HAS HIGH STABILITY

BELL, W. E. BLOOM, A. L. /VARIAN ASSOCIATES/ JAN. 1966

WOO-030

Electrodeless discharge borosilicate glass lamp is used in various high-resolution optical systems. It is partially charged with krypton, contains small amounts of rubidium, and is enclosed in a hermetically sealed envelope that maintains the lamp at an optimum temperature during discharge. The lamp is quickly started by its excitation coil.

B66-10021

SPECIAL MOUNT IMPROVES REMOTE TRANSDUCER ACCURACY

LAYTON, J. P. /PRINCETON UNIV./ JAN. 1966

LEWIS-269

Transducer-mounting device allows measurement of transient pressure in a hostile environment. The device provides free passage areas and a controlled environment for the measuring instrument.

B66-10025

CUPROUS SELENIDE AND SULFIDE FORM IMPROVED PHOTOVOLTAIC BARRIERS

INNOVATOR NOT GIVEN /RCA/ JAN. 1966

WOO-212

Photovoltaic barriers formed by depositing a layer of polycrystalline cuprous sulfide or cuprous selenide on gallium arsenide are chemically and

electrically stable. The stability of these barrier materials is significantly greater than that of cuprous iodide.

B66-10026

IMPROVED CARBON ELECTRODE REDUCES ARC SPUTTERING

INNOVATOR NOT GIVEN /UNION CARBIDE CORP./ JAN. 1966

MSC-219

Carbon rod cores with a smaller proportion of rare earth compounds than in standard cores reduce arc sputtering in optical equipment. This core is produced without additional cost or equipment.

B66-10028

PORTABLE SELF-POWERED DEVICE DETECTS INTERNAL FLAWS IN TUBULAR STRUCTURES

GILMOUR, G. /WESTINGHOUSE ELEC. CORP./ JAN. 1966

NU-0019

Portable probe and eddy-current-sensitive circuitry detects internal flaws or hard spot impurities in an electrically conductive tubular channel by recording the conductivity change at the defect point.

B66-10031

PRESSURE TRANSDUCERS DYNAMICALLY TESTED WITH SINUSOIDAL PRESSURE GENERATOR

JONES, H. B., JR. /PRINCETON UNIV./ JAN. 1966

LEWIS-268

Sinusoidal pressure generator assembly dynamically tests and calibrates pressure transducers by using a chamber whose lowest resonant mode is above the audiofrequency range.

B66-10034

CIRCUIT EXHIBITS POWER EFFICIENCY GREATER THAN 75 PERCENT

HANKOVITZ, R. J. /N. AM. AVIATION/ FEB. 1966

MSC-254

Variable duty cycle pulser increases circuit power efficiency by more than 75 percent when operating solenoid valves. The pulser provides a low-level holding current after a high-level current has actuated the solenoid valves.

B66-10036

FLOWMETER MEASURES LOW GAS-FLOW RATES

WELLS, F. E. FEB. 1966

M-FS-215

Positive-displacement flowmeter measures low gas-flow rates by gauging the time required for a slug of mercury to pass between two reference levels in a tube of known volume.

B66-10038

CIRCUIT OPERATES AS SINE FUNCTION GENERATOR

BOGART, T., JR. /N. AM. AVIATION/ FEB. 1966

MSC-255

Electronic circuit drives sine function generator using square wave and sawtooth sweep generators. The circuit replaces electromechanical driver and increases accuracy.

B66-10039

CONTROL SYSTEM MAINTAINS SELECTED LIQUID LEVEL

BERGESON, R. L. SCHUCK, J. W. /HONEYWELL/ FEB. 1966

MSC-470

Single-sensor control system maintains liquid hydrogen at a preselected desired level within a tank, regardless of boiloff. It calibrates output in percentage. Thus, when the fuel is at the desired level, the system output will indicate 100 percent regardless of what percent of tank capacity the fuel has reached.

B66-10041

COLD CATHODE IONIZATION GAUGE HAS RIGID METAL HOUSING

HERZOG, R. KREISMAN, W. S. /GEOPHYS. CORP. OF AM./ FEB. 1966

GSFC-445

Cold cathode ionization gauge in a stainless steel housing accurately measures high pressures. The Penning effect is used with a high voltage discharge in the presence of a magnetic field for an ion current proportional to the gas pressure in

the gauge.

B66-10042
VIBRATION TESTS ON VIDICONS MADE BY IMPROVED
METHOD
INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ FEB.
1966
JPL-SC-115

Sensitive method is used for checking the performance of vidicons in mechanical vibration tests. The image of the desired fine-detail test pattern is stored in the photosensitive surface of the vidicon while the system is free of mechanical vibration. Mechanical excitation is then applied, and its effects observed.

B66-10046
LAMP AUTOMATICALLY SWITCHES TO NEW FILAMENT
ON BURNOUT
INGLE, W. B. /N. AM. AVIATION/ FEB. 1966
M-FS-498

Lamp with primary and secondary filaments has a means for automatic switching to the secondary filament at primary filament burnout. Lamp failures and resultant expenses during oscillograph printing are appreciably reduced.

B66-10048
NONCONTACTING TRANSDUCER MEASURES SHAFT TORQUE
INNOVATOR NOT GIVEN /N. AM. AVIATION/ FEB. 1966
M-FS-474

Transducer for measuring the output torque of a rotating shaft uses a magnetically permeable sleeve fitted over a section of the shaft which deflects axially in direct proportion to the output torque. A corresponding change in reluctance occurs in pickup coils mounted in close proximity to the sleeve. This change is measured by attached conventional circuitry.

B66-10050
SINGLE CONNECTOR PROVIDES SAFETY FUSES FOR
MULTIPLE LINES
WEBER, G. J. /MCDONNELL AIRCRAFT CORP./ FEB.
1966
MSC-199

Fuse-bearing sleeve which is inserted between the male and female members of a multiple-line connector contains a safety fuse for each pin of the connector assembly. The sleeve is easily and quickly opened for fuse replacement.

B66-10051
FERROELECTRIC BOLOMETER MEASURES RF ABSOLUTE
POWER AT SUBMILLIMETER WAVELENGTHS
COHN, M. RODGERS, J. D. /ADVANCED TECHNOL.
CORP./ FEB. 1966
GSFC-422

Two ferroelectric bolometer sensing elements measure low rf absolute power at millimeter and submillimeter wavelengths. The sensing elements are mounted in sections of waveguide and connected in series in a standard temperature compensating bridge circuit.

B66-10057
MINIATURE BIOELECTRIC DEVICE ACCURATELY
MEASURES AND TELEMETERS TEMPERATURE
FRYER, T. B. FEB. 1966 SEE ALSO B64-10171
ARC-52

Miniature micropower solid-state circuit measures and telemeters the body temperature of laboratory animals over periods up to two years. The circuit employs a thermistor as a temperature sensing element and an FM transmitter. It is constructed from conventional discrete components or integrated circuits.

B66-10062
FORTRAN PROGRAM FLOWCHART IS AUTOMATICALLY
PRODUCED
CLARK, D. J. WILLIAMS, D. /GE/ FEB. 1966
M-FS-369

Computer under control of the FLO-TRAN program automatically produces and updates flowcharts of Fortran program source decks fed to it. The flowcharts are produced on either 35mm film or paper.

B66-10064
TRANSMISSION SYSTEM ISOLATES PRESSURE
TRANSDUCER FROM SEVERE ENVIRONMENT
INNOVATOR NOT GIVEN /SPACE-GEN. CORP./ FEB. 1966
WOO-239

Pressure transmission system measures the pressure of a high temperature, chemically active fluid by isolating the pressure transducer from the process fluid without component disconnections.

B66-10066
ANTENNA CONFIGURATIONS PROVIDE POLARIZATION
DIVERSITY
SCHUMACHER, C. N. /CUTLER HAMMER/ FEB. 1966
GSFC-74

Compact back-to-back trapezoidal tooth log-periodic /TTLP/ antenna with frequency-independent characteristics is formed by reducing the angle between the two elements of a basic TTLP to zero. The back-to-back antenna, arranged in various configurations, provides monopulse operations in one or two planes and in various polarizations.

B66-10067
AUXILIARY COIL CONTROLS TEMPERATURE OF RF
INDUCTION HEATER
INNOVATOR NOT GIVEN /GEN. DYN./ELECTRON./ FEB.
1966
GSFC-428

Auxiliary coil controls the temperature of an RF induction furnace that is powered by a relatively unstable RF generator. Manual or servoed adjustment of the relative position of the auxiliary coil, which is placed in close proximity to the RF coil, changes the lossiness of the RF coil and hence the corresponding heating effect of its RF field.

B66-10068
SENSOR DETECTS HYDROCARBON OIL CONTAMINANTS
IN FLUID LINES
ROTH, B. /N. AM. AVIATION/ FEB. 1966 SEE ALSO
B63-10311
M-FS-522

Sensor with ultraviolet light monitors and detects hydrocarbon oil contaminants present in fluid lines. The light causes the oil particles to fluoresce. This light emitted by the oil particle is detected by a photocell which is relatively insensitive to ultraviolet radiation.

B66-10082
ROD AND DISH CATHODE IMPROVES PENNING-TYPE
VACUUM GAUGE
PEPPIN, G. B. /HUGHES AIRCRAFT CO./ MAR. 1966
GSFC-447

Improved penning-type ionization gauge provides range and sensitivity required to measure gas pressure below .01 torr under high vacuum conditions. The gauge uses a highly conductive cathode composed of two disks of high magnetic permeability separated by a rod of low magnetic permeability.

B66-10084
REFRACTORY COATING PROTECTS INTRICATE GRAPHITE
ELEMENTS FROM HIGH-TEMPERATURE HYDROGEN
FERRIS, J. R. PATTERSON, R. L. STEFFEN, R. J.
VOGEL, C. E. /WESTINGHOUSE ASTRONUCLEAR LAB./
MAR. 1966
NU-0027

Refractory coating protects graphite heater elements operating at high temperature in a hydrogen atmosphere. The coating is formed by painting the graphite elements with a composition containing powdered tungsten, and heat-treating it.

B66-10085
SEISMOMETER DESIGNED FOR REMOTE OPERATION IN
RANDOM ORIENTATION
LEHNER, F. E. /CALIF. INST. OF TECH./ MAR. 1966
JPL-320

Portable seismometer mounted in a rugged housing can be placed in inaccessible locations and operate efficiently in other than a vertically upright position. The instrument housing contains an amplifier, transmitter, and antenna to

relay measurement data to a receiving station.

B66-10088
GELATIN COATED ELECTRODES ALLOW PROLONGED
BIOELECTRONIC MEASUREMENTS
INNOVATOR NOT GIVEN /INST. OF RES. AND
INSTRUMENTATION/ MAR. 1966 SEE ALSO B64-10025,
B65-10015, AND B65-10320
MSC-153

Silver electrodes treated with an anodizing electrolyte containing gelatin are used for long term monitoring of bioelectronic potentials in humans. The electrodes do not interact with perspiration, cause skin irritation, or promote the growth of bacteria.

B66-10089
AUTOMATIC GAIN CONTROL CIRCUIT HANDLES WIDE
INPUT RANGE
BLACK, S. H. /SPERRY GYROSCOPE CO./ MAR. 1966
MSC-166

Automatic gain control circuit for a radio receiver handles a wide range of input signal levels without overloading the output stage. The transistorized circuit maintains a relatively constant output by varying attenuation of the input signal.

B66-10091
VAPOR GROWN SILICON DIOXIDE IMPROVES
TRANSISTOR BASE-COLLECTOR JUNCTIONS
CARLEY, D. R. /RCA/ DUCLOS, R. A. MAR. 1966
GSFC-389

Vapor grown silicon dioxide layer protects base-collector junction in silicon planar transistors during the emitter diffusion process. This oxide fills in any imperfections that exist in the thermally grown oxide layer and is of greater thickness than that layer. This process is used to deposit protective silicon dioxide coatings on optical surfaces.

B66-10094
SYSTEM PROPORTIONS FLUID-FLOW IN RESPONSE
TO DEMAND SIGNALS
INNOVATOR NOT GIVEN /CURTISS-WRIGHT CORP./
GSFC-457

Control system provides proportioned fluid flow rates in response to demand signals. It compares a digital signal, representing a flow demand, with a reference signal to yield a control voltage to one or more solenoid valves connected to orifices of a predetermined size.

B66-10097
COMPUTER PROGRAM SIMPLIFIES SELECTION OF
STRUCTURAL STEEL COLUMNS
VISSING, G. S. MAR. 1966
NU-0044

Computer program rapidly selects appropriate size steel columns and base plates for construction of multistory structures. The program produces a printed record containing the size of a section required at a particular elevation, the stress produced by the loads, and the allowable stresses for that section.

B66-10099
CAPACITIVE SYSTEM DETECTS AND LOCATES FLUID
LEAKS
INNOVATOR NOT GIVEN /N. AM. AVIATION/ MAR. 1966
M-FS-478

Electronic monitoring system automatically detects and locates minute leaks in seams of large fluid storage tanks and pipelines covered with thermal insulation. The system uses a capacitive tape-sensing element that is adhesively bonded over seams where fluid leaks are likely to occur.

B66-10101
RING COUNTER CIRCUIT SWITCHES MULTIPHASE
MOTOR DIRECTION OF ROTATION
FAIRBANKS, A. F. /SPACE TECH. LABS./ MAR. 1966
JPL-SC-166

Solid state three-phase counter circuit reverses the direction of rotation of a multiphase motor without changing the phase wiring of the supply current source.

B66-10103
MOUNT MAKES LIQUID NITROGEN-COOLED GAMMA RAY
DETECTOR PORTABLE
FESSLER, T. E. MAR. 1966
LEWIS-259

Liquid nitrogen-cooled gamma ray detector system is made portable by attaching the detector to a fixture which provides a good thermal conductive path between the detector and the liquid nitrogen in a Dewar flask and a low heat leak path between the detector and the external environment.

B66-10105
ANGULAR ACCELERATION MEASURED BY DEFLECTION
IN SENSING RING
RICHARD, R. R. MAR. 1966
MSC-250

Small, lightweight angular accelerometer performs reliably when subjected to harsh temperature and vibration environments. The device uses strain gauges to measure the amount of deflection in a metal ring caused by movement of inertial masses mounted through the ring. Range of the instrument is varied by varying the value of inertial masses.

B66-10106
LOW-POWER RING COUNTER DRIVES HIGH-LEVEL
LOADS
INNOVATOR NOT GIVEN /SPERRY RAND/ MAR. 1966
GSFC-431

Ring counter dissipates very low power in standby conditions, yet drives high-current loads on a low duty-factor basis. Complementary transistors are used so that in one selected stage both transistors are conducting while the transistors of the other stage are cut off.

B66-10109
CHARGED PROBES; BOURDON TUBES MAINTAIN
CRYOGENIC LIQUID LEVEL
KREJSA, M. J. MAY 1966
LEWIS-261

Automatic liquid nitrogen dispensing system maintains the fluid level in a nitrogen cold trap. The system uses gas-filled probes which drive bourdon tube gauges equipped with microswitches that, through a relay, control a solenoid valve in the liquid nitrogen line.

B66-10112
NEW TELEVISION CAMERA ELIMINATES VIDICON TUBE
INNOVATOR NOT GIVEN /WESTINGHOUSE ELEC. CORP./
MAY 1966
M-FS-472

Small, lightweight camera systems use solid state imaging devices in the form of phototransistor mosaic sensors instead of vidicon tubes for light sensing and image conversion. The digital logic circuits scan the sensor mosaic at 60 frames per second to produce pictures composed of a series of dots rather than lines.

B66-10113
IMPROVED CHOPPER CIRCUIT USES PARALLEL
TRANSISTORS
INNOVATOR NOT GIVEN /IBM/ MAR. 1966
M-FS-468

Parallel transistor chopper circuit operates with one transistor in the forward mode and the other in the inverse mode. By using this method, it acts as a single, symmetrical, bidirectional transistor, and reduces and stabilizes the offset voltage.

B66-10126
VARIABLE-CAPACITANCE TACHOMETER ELIMINATES
TROUBLESOME MAGNETIC FIELDS
INNOVATOR NOT GIVEN /BENDIX CORP./ MAR. 1966
GSFC-435

Dual variable-capacitance tachometer measures angular speed and sense of rotation without magnetic components. Thus it eliminates magnetic flux interference with associated instrumentation in an electromechanical system.

B66-10127
APPARATUS MEASURES THERMAL CONDUCTIVITY OF
HONEYCOMB-CORE PANELS

01 ELECTRICAL (ELECTRONIC)

MAR. 1966
LANGLEY-202

Overall thermal conductivity of honeycomb-core panels at elevated temperatures is measured by an apparatus with a heater assembly and a calibrated heat-rate transducer. The apparatus has space between the heater and transducer for insertion of a test panel and insulation.

B66-10128
OPTICAL GYRO PICKOFF OPERATES AT CRYOGENIC TEMPERATURES
INNOVATOR NOT GIVEN /GE/ MAR. 1966
M-FS-407

Two-axis pickoff for cryogenic gyros uses solid-state light sources and sensors. This compact system operates efficiently at cryogenic temperatures.

B66-10129
DIGITALLY CONTROLLED PULSE-LEVEL DISCRIMINATOR OPERATES OVER WIDE VOLTAGE RANGE
CANCRO, C. A. MAR. 1966
GSFC-324

Low power drain discriminator circuit generates an output pulse when an input pulse exceeds a discrete digitally controlled threshold voltage. The discriminator operates over a wide linear or nonlinear range of threshold levels. It uses several amplifier stages ahead of a fixed-reference threshold detector.

B66-10130
MATERIALS PHYSICALLY TESTED IN VARIABLE-ENVIRONMENT CHAMBER
KNOELL, A. C. MAR. 1966
JPL-789

Controlled environment chamber for physical tests of crushable materials encloses both the test specimen and the devices for performing the tests. The chamber may be stepped through a range of changing environment.

B66-10133
OMNIDIRECTIONAL ANTENNAS TRANSMIT AND RECEIVE OVER LARGE BANDWIDTH
WOODWARD, D. M., JR. /RCA/ MAR. 1966
GSFC-436

For exchanging wideband signals between two distant ground stations, low-gain antennas with wide angular coverage and circular polarization are mounted on a single mast extending from a satellite. The transmitting antenna has two decoupled ports or inputs for eliminating switching problems when using two transmitters on different frequencies.

B66-10134
HIGH TEMPERATURE THERMOCOUPLE OPERATES IN REDUCTION ATMOSPHERE
HOFF, R. G. /AEROJET-GEN. CORP./ MAR. 1966
NU-0046

Thermocouple continuously measures a flowing gas up to 4500 degrees F in a hazardous environment. The thermocouple combines rhodium and tungsten in the probe, housing, and swaged extension lead. The wires extend continuously from the cold junction to the probe tip to eliminate errors from secondary thermocouple effects.

B66-10141
OPTICALLY DRIVEN SWITCH TURN-OFF TIME REDUCED BY OPAQUE COATINGS
INNOVATOR NOT GIVEN /IBM/ APR. 1966
JPL-SC-107

Turn-off response time of an optically driven switch is reduced by placing an opaque covering over the passivating silicon dioxide members. The coating prevents photon absorption so that carriers are not trapped or stored on the base region, thus shortening turn-off time.

B66-10142
DIFFUSION TECHNIQUE STABILIZES RESISTOR VALUES
GALLAGHER, R. C. GIULIANO, M. N. /WESTINGHOUSE ELEC. CORP./ APR. 1966
MSC-205

Reduction of the contact resistance stabilizes the

values, over a broad temperature range, of resistors used in linear integrated circuits. This reduction is accomplished by P-plus diffusion under the alloyed aluminum contacts.

B66-10144
MOUNTING IMPROVES HEAT-SINK CONTACT WITH BERYLLIA WASHER
INNOVATOR NOT GIVEN /COLLINS RADIO CO./ APR. 1966
SEE ALSO B63-10033
MSC-194

To conduct heat away from electrical components that must be electrically insulated from a metal heat sink, a metal washer and a coil spring are placed between one end of the electrical component and the beryllia washer mounted on the heat sink. The thermal paths are formed by the component lead and base, the metal and beryllia washers, and the compressed spring.

B66-10147
POLYMER DEFORMATION GAUGE MEASURES THICKNESS CHANGE IN TENSILE TESTS
BROYLES, H. F. BROYLES, H. H. APR. 1966
JPL-745

Lightweight deformation gauge attached to a polymer specimen determines the thickness changes undergone by the specimen during the testing of its tensile and elongation properties. Mechanical noise from outside sources is dampened when the assembly is hung on a light rubber band.

B66-10148
TESTER PERIODICALLY REGISTERS DC AMPLIFIER CHARACTERISTICS
CREE, D. WENZEL, G. E. APR. 1966
MSC-190

Motor-driven switcher-recorder periodically registers the zero drift and gain drift signals of a dc amplifier subjected to changes in environment. A time coding method is used since several measurements are shared on a single recorder trace.

B66-10158
SWITCHING MECHANISM SENSES ANGULAR ACCELERATION
INNOVATOR NOT GIVEN /BALL BROS. RES. CORP./ APR. 1966
GSFC-462

Switching mechanism actuates an electrical circuit when a predetermined angular acceleration and displacement are reached. A rotor in the mechanism overcomes the restraint of a magnetic detent when the case in which the detent is mounted reaches the predetermined angular acceleration.

B66-10159
IMPROVED SYSTEM MEASURES OUTPUT ENERGY OF PYROTECHNIC DEVICES
SHORTLY, E. M. /N. AM. AVIATION/ APR. 1966
WOD-256

System for measuring the output energy of pyrotechnic devices discharges the reaction products into a test chamber. It measures the radiant heat output from a pinhole aperture as well as internal pressure changes on a common time base.

B66-10160
ELECTROPNEUMATIC TRANSDUCER AUTOMATICALLY LIMITS MOTOR CURRENT
LOVITT, T. F. APR. 1966
LEWIS-253

Pneumatic controller regulates the load on a centrifugal freon compressor in a water cooling system, thus limiting the current input to an electric motor driving it. An electromechanical transducer monitoring the motor input current sends out air signals which indicate changes in the current to the pneumatic controller.

B66-10161
TRANSDUCER MEASURES FORCE IN VACUUM ENVIRONMENT
GLENN, D. C. APR. 1966
LEWIS-218

Transducer assembly measures force in a vacuum environment. The assembly consists of a standard capacitance probe and a torque beam. This transducer can be used in high-pressure as well as in low-pressure environments for static and dynamic force measurements.

B66-10162
FIXTURE AIDS SOLDERING OF ELECTRONIC COMPONENTS ON CIRCUIT BOARD
 ROSS, M. H. APR. 1966
 ARC-56

Spring clamp fixture holds small electronic components in a desired position while they are being soldered on a circuit board. The spring clamp is clipped on the edge of the circuit board and an adjustable spring-steel boom holds components against the board. The felt pad at the end of the boom is replaced with different attachments for other holding tasks.

B66-10163
TWO-LIGHT CIRCUIT CONTINUOUSLY MONITORS AC GROUND, PHASE, AND NEUTRAL WIRES
 MEE, R. W. /N. AM. AVIATION/ APR. 1966
 MSC-356

Two-transformer, two-lamp circuit monitors the continuity of ac ground, neutral, and phase wires. The circuit gives different visual indications if any one of the three lines should become open circuited.

B66-10164
FATIGUE TESTER ACHIEVES TRUE AXIAL MOTION THROUGH FLEX PLATES AND BARS
 HENGSTENBERG, T. F. /WESTINGHOUSE ASTRONUCLEAR LAB./ KURINKO, C. D. APR. 1966
 NU-0021

Lever load-amplifying fatigue testing machine with a load cycle frequency of 100 to 900 cycles per minute applies the load through true axial motion. Pivot friction and bearing wear are eliminated by replacing these parts with flex plates and bars.

B66-10170
SCANNING PHOTOMETER SYSTEM AUTOMATICALLY DETERMINES ATMOSPHERIC LAYER HEIGHT
 WOLFF, M. /MASS. INST. OF TECH./ APR. 1966
 MSC-245

Two photometers, placed a given distance apart, determine the height of nonuniform luminous layers in a synchronous manner. Photometer outputs are correlated by a simple analog correlation computer to automatically give the luminous layer height. This system is used to determine visibility ceilings at airports.

B66-10177
BINARY FLUID AMPLIFIER SOLVES STABILITY AND LOAD PROBLEMS
 LARKIN, B. D. READER, T. D. /GIANNINI CONTROLS CORP./ MAY 1966
 ERC-15

Digital fluid amplifier has load insensitivity, high stability, and operates at low Reynolds numbers. It contains specially designed nozzles to provide uniform exit-velocity profiles and to ensure jets of low turbulence.

B66-10179
COMPLEMENTARY MONOSTABLE CIRCUITS ACHIEVE LOW POWER DRAIN AND HIGH RELIABILITY
 KLEINBERG, L. L. LAVIGNE, R. C. MAY 1966
 GSFC-433

Two-transistor multivibrator has minimum power dissipation and maximum reliability. It minimizes the use of components that are subject to environmental changes or other unpredictable behavior.

B66-10180
THIN-FILM GAGE MEASURES LOW HEAT-TRANSFER RATES
 SPITZER, C. R. MAY 1966
 LANGLEY 205

Low heat-transfer gauge facilitates determination of the transition between laminar and turbulent conditions, in the boundary layer surrounding slender and moderately slender cones under test in

a hypersonic blowdown helium tunnel. The gauge consists of a thin layer of vacuum-evaporated platinum on a heat resistant glass substrate contoured to fit model surfaces.

B66-10182
SUBMINIATURIZED GAS CHROMATOGRAPH GIVES FAST, EFFICIENT ANALYSIS
 WILHITE, W. F. MAY 1966
 JPL-735 JPL-736 JPL-737 JPL-740

Space oriented, lightweight, subminiaturized gas chromatograph analyzes gas samples in a few seconds with a carrier gas flow of one milliliter per second. In extraterrestrial exploration, the system could be used with a mass spectrometer for detection of life-supporting compounds.

B66-10192
COATING PERMITS USE OF STRAIN GAGE IN WATER AND LIQUID HYDROGEN
 BERNEN, B. B. /N. AM. AVIATION/ MAY 1966
 M-FS-594

Strain gauge installation covered with a three-layer coating of commercial materials makes measurements in water and liquid hydrogen. It consists of a selected foil strain gauge bonded with a modified commercial heat-curing epoxy cement. The outer protective layer of the gauge installation may develop cracks when immersed in liquid hydrogen.

B66-10193
SOLID STATE THERMOSTAT HAS INTEGRAL PROBE AND CIRCUITRY
 INNOVATOR NOT GIVEN /METRO PHYS., INC./ MAY 1966
 M-FS-434

Compact, reliable thermostat provides a temperature readout signal and a continuous temperature-control output for temperature monitoring by automatic checkout equipment or telemetry systems. It employs a solid state circuit in a housing rigidly attached to a thermistor probe.

B66-10198
DEVICE WITHOUT ELECTRICAL CONNECTIONS IN TANK MEASURES LIQUID LEVEL
 SHENKMAN, J. S. /V. K. C. AEROJET-GEN. CORP./ MAY 1966
 W00-235

Vertical static float in a tank measures the liquid level without the use of electrical connections in the tank. The float transmits the buoyant force of the liquid to an external force transducer. It is insensitive to tank pressure and temperature changes.

B66-10200
APPARATUS PRESENTS VISUAL DISPLAY OF SEMICONDUCTOR SURFACE CHARACTERISTICS
 SUMMERS, R. A. MAY 1966
 JPL-665

Apparatus provides a representation of the physicochemical condition of the surface layers of a semiconductor. It is based on the principle that the surface layers of a semiconductor will conduct an electric current when exposed to a beam of light.

B66-10203
SOLDERING IRON TEMPERATURE IS AUTOMATICALLY REDUCED
 LUM, J. Y. MAY 1966
 ARC-57

Hinged cradle-microswitch arrangement maintains a soldering iron at less than peak temperature when not in use. The microswitch introduces a voltage reducing element into the soldering iron power circuit when the iron is placed on the cradle. The iron, when removed from the cradle, returns to operating temperature in 15 to 30 seconds.

B66-10205
WIDE-RANGE INSTRUMENT MONITORS FLOW RATES OF CHEMICALLY ACTIVE FLUIDS
 INNOVATOR NOT GIVEN /SPACELABS/ MAY 1966
 MSC-186

In-line transducer system measures flow rates of chemically active propellant fluids. The system

uses one low-flow transducer and one high-flow transducer. Each consists of separate heater and temperature-sensing elements

B66-10220
ULTRASONIC RECORDING SCANNER USED FOR
NONDESTRUCTIVE WELD INSPECTION
INNOVATOR NOT GIVEN /BOEING CO./ MAY 1966 SEE
ALSO B66-10178
M-FS-284

Portable ultrasonic recording scanner is used for nondestructive inspection of welds. It is adaptable to continuous operation in one direction while maintaining oscillatory motion at a right angle to this direction. The scanning speed and oscillation frequency are independently adjustable.

B66-10223
MULTICOLOR STROBOSCOPE PINPOINTS RESONANCES IN
VIBRATING COMPONENTS
INNOVATOR NOT GIVEN /CALIF. INST. RES. FOUND./
MAY 1966
JPL-0033

Stroboscopic system, which uses three different colored lights, rapidly scans a multicomponent assembly and provides a visual indication of resonant components. The lights are pulsed at the same flash frequency but at different phases.

B66-10224
FET COMPARATOR DETECTS ANALOG SIGNAL LEVELS
WITHOUT LOADING ANALOG DEVICE
WALLACE, H. L. /GE/ MAY 1966
M-FS-503

FET comparator circuit detects discrete analog computer output levels without excessively loading the output amplifier of the computer. An FET common source amplifier is coupled by a differential amplifier to a bistable transistor flip-flop. This circuit provides a digital output for analog voltages above or below a predetermined level.

B66-10225
SINGLE-CRYSTAL SEMICONDUCTOR FILMS GROWN ON
FOREIGN SUBSTRATES
VOHL, P. /RCA/ MAY 1966
WOO-076

Intermediate alloy formed between foreign substrates and semiconductor material enable the growth of single crystal semiconductor films on the alloy layer. The melted film must not ball up on the surface of the substrate and neither chemically react nor alloy with the intermediate alloy formed on the substrate.

B66-10232
ELECTRONIC PHASE-LOCKED-LOOP SPEED CONTROL
SYSTEM IS STABLE
STONE, F. A. /RAYMOND ENG. LAB./ JUN. 1966
JPL-SC-084

Phase locked-loop circuit is used for playback motors in digital tape recorders where the reproducer output remains in exact synchronism with an external reference clock over extended periods. It removes the motor dynamics from the control loop so that the loop is stable without damping.

B66-10245
RUGGED MICROELECTRONIC MODULE PACKAGE SUPPORTS
CIRCUITRY ON HEAT SINK
JOHNSON, A. L. /MINNEAPOLIS-HONEYWELL REGULATOR
CO./ JUN. 1966
MSC-81A

Rugged module package for thin film hybrid microcircuits incorporated a rigid, thermally conductive support structure, which serves as a heat sink, and a lead wire block in which T-shaped electrical connectors are potted. It protects the circuitry from shock and vibration loads, dissipates internal heat, and simplifies electrical connections between adjacent modules.

B66-10251
POLARIZING KEYS PREVENT MISMATCH OF CONNECTOR
PLUGS AND RECEPTACLES
CHIAPUZZO, A. /N. AM. AVIATION/ JUN. 1966

MSC-443

Keying prevents mismatching of plugs and receptacles in connector patching of instrumentation involving several thousand leads. Each receptacle and plug contains three polarizing keys that must mate in a complementary mode before the connector pins and sockets will engage.

B66-10260
MULTIPLE TEMPERATURES SAMPLED USING ONLY ONE
REFERENCE JUNCTION
COPE, G. W. JUN. 1966
GSFC-485

In a multitemperature sampling system where the reference thermocouples are a distance from the test thermocouples, an intermediate thermal junction block is placed between the sets of thermocouples permitting switching between a single reference and the test thermocouples. This reduces the amount of cabling, reference thermocouples, and cost of the sampling system.

B66-10261
SIMPLIFIED CIRCUIT CORRECTS FAULTS IN PARALLEL
BINARY INFORMATION CHANNELS
GOLDBERG, J. /STANFORD RES. INST./ JUN. 1966
SEE ALSO B65-10025
JPL-SC-090

Corrective circuit prevents the appearance of erroneous output signals from the possible failure of any single-channel element interconnected in parallel binary information channels. The circuit is simplified and economical because it does not use redundant channels.

B66-10264
BINARY SEQUENCE DETECTOR USES MINIMUM NUMBER
OF DECISION ELEMENTS
PERLMAN, M. JUN. 1966
JPL-673

Detector of an n bit binary sequence code within a serial binary data system assigns states to memory elements of a code sequence detector by employing the same order of states for the sequence detector as that of the sequence generator when the linear recursion relationship employed by the sequence generator is given.

B66-10270
MAGNETICALLY OPERATED LIMIT SWITCH HAS
IMPROVED RELIABILITY, MINIMIZES ARCING
STEINER, R. /N. AM. AVIATION/ JUN. 1966
MSC-422

Limit switch for reliable, low-travel, snap action with negligible arcing uses an electrically nonconductive permanent magnet consisting of a ferrimagnetic ceramic and ferromagnetic pole shoes which form a magnetic and electrically conductive circuit with a ferrous-metal armature.

B66-10271
PN ACQUISITION DEMODULATOR ACHIEVES AUTOMATIC
SYNCHRONIZATION OF A TELEMETRY CHANNEL
COUVILLON, L. JUN. 1966
JPL-612

Data demodulator for automatic sync acquisition provides an automatic means for obtaining initial word and bit synchronization in a pulse-code-modulated/phase-shift-keyed digital communications system.

B66-10272
EXCLUSIVE-OR LOGIC CIRCUIT HAS USEFUL
PROPERTIES
BATTE, W. G. JUN. 1966
LANGLEY-214

Single, simple exclusive-or logic connective eliminates excessive hardware and the number of interconnections between logic modules. This circuit performs the necessary switching for the exclusive-or operation and amplifies, restores, and inverts the signal.

B66-10274
BRAZE ALLOYS USED AS TEMPERATURE INDICATORS
RICE, R. E. /AEROJET-GEN. CORP./ SHURLEY, L. A.

JUN. 1966
NU-0063

Patches of braze alloys having known fusion are applied to portions of a metal surface where temperature indicators are required. This method is used to measure temperatures over the range of 175 degrees to 2100 degrees fahrenheit where it is not feasible to employ conventional temperature detectors.

B66-10280
STRAIN GAGE NETWORK DISTINGUISHES BETWEEN
THERMAL AND MECHANICAL DEFORMATIONS
CEPOLLINA, F. J. JUN. 1966
GSFC-478

Strain gage network measures the thermal coefficient of linear expansion of composite metal structures. The network consists of a test gage and two dummy gauges arranged to distinguish thermally induced deformation from mechanical strain.

B66-10282
SIMPLE CIRCUIT PROVIDES RELIABLE MULTIPLE
SIGNAL AVERAGE AND REJECT CAPABILITY
OPENSHAW, R. L. /AEROJET-GEN. CORP./ JUN. 1966
NU-0069

Summation average and reject circuit based on diode clamping allows detection of individual functional deviations in a multiple signal system without shutting down the entire system.

B66-10286
VACUUM TEST FIXTURE IMPROVES LEAKAGE RATES
MEASUREMENTS
HAIER, H. MARX, H. /GRUMMAN AIRCRAFT CORP./
JUN. 1966
MSC-271

Cylindrical chamber, consisting of two matching halves, forms a vacuum test fixture for measuring leakage rates of individual connections, brazed joints, and entrance ports used in closed fluid flow line systems. Once the chamber has been sufficiently evacuated, atmospheric pressure holds the two halves together.

B66-10287
DETECTION SYSTEM ENSURES POSITIVE ALARM
ACTIVATION IN DIGITAL MESSAGE LOSS
BOKROS, P. BURSTEIN, A. HEWITT, E. D. /RCA/
JUN. 1966
WOO-208

Lost Word Detection System /LOWDS/ provides special identification for each error detection message transmitted from receiver to transmitter. The message is identified as an original message or an n-times retransmitted message so the receiver can detect where a retransmission request was not fulfilled and activate an alarm.

02 PHYSICAL SCIENCES (ENERGY SOURCES)

B66-10004
COPPER FOIL PROVIDES UNIFORM HEAT SINK PATH
PHILLIPS, I. E., JR. SCHREIHANS, F. A. /N. AM.
AVIATION/ JAN. 1966
MSC-262

Thermal path prevents voids and discontinuities which make heat sinks in electronic equipment inefficient. The thermal path combines the high thermal conductivity of copper with the resiliency of silicone rubber.

B66-10008
AUTOMATIC FLUID SEPARATOR SUPPLIES OWN DRIVING
POWER
DECKER, M. S. MAJNERI, L. A. SPULGIS, I. S.
/MIDLAND-ROSS CORP./ JAN. 1966
WOO-085

Centrifugal separator suspended in the fuel tank of a space vehicle selects and vents gas vapor at zero gravity. Escaping vapor is used to drive an expander turbine that is magnetically coupled to the separator.

B66-10010
OPTICAL PROJECTORS SIMULATE HUMAN EYES TO
ESTABLISH OPERATOR'S FIELD OF VIEW
BEAR, R. A. /N. AM. AVIATION/ JAN. 1966
WOO-250

Device projects visual pattern limits of the field of view of an operator as his eyes are directed at a given point on a control panel. The device, which consists of two projectors, provides instant evaluation of visual ability at any point on a panel.

B66-10016
SINGLE PROJECTOR ACCOMMODATES SLIDES OF
DIFFERENT SIZE AND FORMAT
GATES, G. M. JAN. 1966
GSFC-439

Projector with two adjustable external units accommodates slides of different size and format. One external unit is the holder for different size slides and includes mounting means for appropriate condensing lens and heat filters. The other unit is a turret lens assembly. The machine is easily adaptable to rear-screen and front-screen projection over various distances.

B66-10017
PTFE-ALUMINUM FILMS SERVE AS NEUTRAL DENSITY
FILTERS
BURKS, H. D. JAN. 1966
LANGLEY-189

Polytetrafluoroethylene /PTFE/ films coated with aluminum films act as neutral density filters in the wavelength range 0.3 to 2.1 microns. These filters are effective in the calibration of photometric systems.

B66-10045
COMPLEMENTARY SYSTEM VAPORIZES SUBCOOLED
LIQUID, IMPROVES TRANSFORMER EFFICIENCY
KETALLY, E. C. /N. AM. AVIATION/ FEB. 1966
M-FS-550

Complementary system converts subcooled liquid hydrogen or nitrogen to gas. The inherent induction heat losses of an electrical transformer are used in the vaporizing process. Transformer efficiency is improved in the process.

B66-10058
CALORIMETER ACCURATELY MEASURES THERMAL
RADIATION ENERGY
ANDERSON, W. W., JR. MILLER, H. B. SWEET, G. E.
FEB. 1966
LANGLEY-173

Calorimeter accurately measures steady-state and transient, low-level thermal radiation energy. The calorimeter uses a compensating shield between the sensor and the calorimeter mount to intercept sensor heat losses and to provide a reference for determining a correction factor.

B66-10060
THIN CARBON FILM SERVES AS UV BANDPASS FILTER
INNOVATOR NOT GIVEN /GEOPHYS. CORP. OF AM./ FEB.
1966
ERC-8

Thin carbon film deposited on a 70 percent transparent screen provides a filter for narrow-band detectors in the extreme ultraviolet. The filter also suppresses scattered light and light of unwanted orders in vacuum spectrographs.

B66-10072
BEAM SPLITTER USED IN DUAL FILMING TECHNIQUE
ZELDIN, S. /N. AM. AVIATION/ FEB. 1966
M-FS-501

Tubular tee is intersected at its junction by a reflecting/transmitting mirror angled to provide two images of an object for simultaneous photographing from two positions. This method is used when space and focal conditions are limited.

B66-10075
SPECIMEN HOLDER DESIGN IMPROVES ACCURACY
OF X-RAY POWDER ANALYSIS
MACK, M. /N. AM. PHILLIPS CORP./ FEB. 1966
JPL-SC-165

Specimen holder for X-ray diffraction analysis presents the specimen to the incident X-rays in

02 PHYSICAL SCIENCES (ENERGY SOURCES)

a curvature. This permits the use of an X-ray beam having a larger divergence angle, the beam intensity is increased, and the statistical accuracy of analysis is improved.

B66-10079
HIGH-PRESSURE, LOW TEMPERATURE ELECTRICAL CONNECTOR MAKES NO-LEAK SEAL
WEAKLEY, J. F. /N. AM. AVIATION/ MAR. 1966
MSC-276

Flow control of cryogenic liquids is achieved through use of an electrical feed-through connector with a solenoid-type valve. To prevent gas leakage, the connector is designed and structured so that extremely high pressure and low temperatures contribute to its sealing properties.

B66-10086
SCREEN OF CYLINDRICAL LENSES PRODUCES STEREOSCOPIC TELEVISION PICTURES
NORK, C. L. /SPACQ, INC./ MAR. 1966
M-FS-273

Stereoscopic television pictures are produced by placing a colorless, transparent screen of adjacent parallel cylindrical lenses before a raster from two synchronized TV cameras. Alternate frames from alternate cameras are displayed. The viewer's sensory perception fuses the two images into one three-dimensional picture.

B66-10095
ULTRAVIOLET PHOTOGRAPHIC PYROMETER USED IN ROCKET EXHAUST ANALYSIS
LEVIN, B. P. /N. AM. AVIATION/ MAR. 1966
M-FS-499

Ultraviolet photographic pyrometer investigates the role of carbon as a thermal radiator and determines the geometry, location, and progress of afterburning phenomena in the exhaust plume of rocket engines using liquid oxygen/RP-1 as propellant.

B66-10096
INEXPENSIVE INFRARED SOURCE IMPROVISED FROM FLASHLIGHT
INNOVATOR NOT GIVEN /FAIRCHILD HILLER CORP./ MAR. 1966
M-FS-494

Inexpensive hand-held source of infrared energy is provided by a flashlight bulb coated with a paint which filters out the visible light emitted by the bulb and transmits only infrared radiation. This device can be used for checking infrared sensors and for experimental purposes.

B66-10098
NEW ENERGY STORAGE CONCEPT USES TAPES
GRUBER, A. KAFESJIAN, R. R. /MONSANTO RES. CORP./ MAR. 1966
LEWIS-239

Energy storage system uses movable permeable tapes with cathode and electrolyte material that is drawn across an anode to produce electric power. The system features long shelf life, high efficiency, and flexible operation.

B66-10108
PLASTIC SCINTILLATOR CONVERTS STANDARD PHOTOMULTIPLIER TO ULTRAVIOLET RANGE
INNOVATOR NOT GIVEN /GEOPHYS. CORP. OF AM./ MAR. 1966
ENC-9

Commercially available plastic scintillators are attached to the glass windows of standard photomultiplier tubes for detection of ultraviolet radiation.

B66-10114
HIGHLY SENSITIVE SOLIDS MASS SPECTROMETER USES INERT-GAS ION SOURCE
INNOVATOR NOT GIVEN /GEOPHYS. CORP. OF AM./ MAR. 1966
ERC-11

Mass spectrometer provides a recorded analysis of solid material surfaces and bulk. A beam of high-energy inert-gas ions bombards the surface atoms of a sample and converts a percentage into an ionized vapor. The mass spectrum analyzer separates the vapor ionic constituents by mass-

to-charge ratio.

B66-10121
COMPOUND IMPROVES THERMAL INTERFACE BETWEEN THERMOCOUPLE AND SENSED SURFACE
KALLIN, I. N. /WESTINGHOUSE ASTRONUCLEAR LAB/ MAR. 1966
NU-0028

Thermocouples and brittle materials are joined without welding by an epoxy resin cement mixer with a conducting material. This mixture does not form thermal barriers at cryogenic temperatures.

B66-10122
NIOBIUM THIN FILMS ARE SUPERCONDUCTIVE IN STRONG MAGNETIC FIELDS AT LOW TEMPERATURES
CLOUGH, P. J. /NATL. RES. CORP./ FOWLER, P. MAR. 1966
JPL-SC-174

Niobium film superconductor carries high currents in strong magnetic fields. The thin niobium film is formed on an inert substrate through evaporation in a vacuum environment. Control of temperature and vacuum results in rejection of gaseous impurities so that the film is of a very high purity.

B66-10143
SEXTANT MEASURES SPACECRAFT ALTITUDE WITHOUT GRAVITATIONAL REFERENCE
INNOVATOR NOT GIVEN /GEONAUTICS, INC./ APR. 1966
MSC-200

Horizon-sensing sextant measures the altitude of an orbiting spacecraft without gravitational reference by optically measuring the dip angle to the horizon along a line of sight in each of two planes. The sextant scans over a relatively limited field of view.

B66-10153
ARGON PURGE GAS COOLED BY CHILL BOX
SPIRO, L. W. /N. AM. AVIATION/ APR. 1966
M-FS-560

Cooling argon purge gas by routing it through a shop-fabricated chill box reduces charring of tungsten inert gas torch head components. The argon gas is in a cooled state as it enters the torch head and prevents buildup of char caused by the high concentrations of heat in the weld area during welding operations.

B66-10156
CIRCULAR, EXPLOSION-PROOF LAMP PROVIDES UNIFORM ILLUMINATION
INNOVATOR NOT GIVEN /N. AM. AVIATION/ APR. 1966
MSC-382

Circular explosion-proof fluorescent lamp is fitted around a TV camera lens to provide shadowless illumination with a low radiant heat flux. The lamp is mounted in a transparent acrylic housing sealed with clear silicone rubber.

B66-10157
CRYOGENIC LIQUID TRANSFER SYSTEM REDUCES RESIDUAL BOILOFF
HEGLAND, D. E. APR. 1966 2 P
LEWIS-274

System for transferring cryogenic liquids to a dewar prevents boiloff of residual liquid by venting the boiloff to the atmosphere during the transfer tube cooling period. The system is most useful with liquids having very small heat vaporization.

B66-10173
OFFSET LENSES AND VERSATILITY TO PHOTOTYPESETTING MACHINE
JAMES, A. M. /DOCUMENTATION, INC./ APR. 1966
HQ-9

Offset lenses facilitate the composition of inputs of other than straight baseline characters on the Photon phototypesetting machine. A number of lenses in the turret are mounted in an offset pattern that causes characters projected through them to fall on the photographic paper in the magazine above and below the baseline.

B66-10178
FATIGUE CRACKS DETECTED AND MEASURED WITHOUT TEST INTERRUPTION
 FRECHE, J. C. KLIMA, S. J. LESCO, D. J. MAY 1966
 LEWIS-266

Ultrasonic flaw detector records cracks in materials undergoing fatigue test, without interfering with test progress. The detector contains modified transducers clamped to the specimens, and an oscilloscope readout.

B66-10181
ALUMINUM DOPING IMPROVES SILICON SOLAR CELLS
 MAY 1966 SEE ALSO NASA-TN-D-2711
 LEWIS-206

Aluminum doped silicon solar cells with resistivities in the 10- to 20-ohm centimeter range have broad spectral response, high efficiency and long lifetimes in nuclear radiation environments. Production advantages include low material rejection and increased production yields, and close tolerance control.

B66-10183
INSULATION FOR CRYOGENIC TANKS HAS REDUCED THICKNESS AND WEIGHT
 DUMIRE, P. E. MIDDLETON, R. L. SCHELL, J. T. STUCKEY, J. M. MAY 1966 SEE ALSO NASA-SP-5030
 M-FS-326

Dual seal insulation, consisting of an inner layer of sealed-cell Mylar honeycomb core and an outer helium purge channel of fiberglass-reinforced phenolic honeycomb core, is used as a thin, lightweight insulation for external surfaces of cryogenic-propellant tanks.

B66-10186
RADIATION USED TO TEMPERATURE COMPENSATE SEMICONDUCTOR STRAIN GAGES
 GROSS, C. MAY 1966
 LANGLEY-207

Exposure to high energy electron radiation reduces the temperature coefficients of resistance and gauge factor of a range of resistivities of n- and p-type semiconductor silicon strain gauges. After irradiation, the gauges are heated to a high temperature for a 24-hour period to stabilize their temperature coefficients.

B66-10187
RUBBER-COATED BELLOWS IMPROVES VIBRATION DAMPING IN VACUUM LINES
 HEGLAND, D. E. SMITH, R. J. MAY 1966
 LEWIS-273

Compact vibration damping systems, consisting of rubber-coated metal bellows with a sliding O-ring connector, are used in vacuum lines. The device presents a metallic surface to the vacuum system and combines flexibility with the necessary stiffness. It protects against physical damage, reduces fatigue failure, and provides easy mating of nonparallel lines.

B66-10199
MOUNT ENABLES PRECISION ADJUSTMENT OF OPTICAL-INSTRUMENTATION MIRROR
 INNOVATOR NOT GIVEN /MASS. INST. OF TECH./ MAY 1966
 MSC-184

Mirror mount assembly allows the plane of a mirror to be adjusted through small angles about two orthogonal axes. The assembly, which has a mirror mount with two independently adjustable flexure joints, allows independent precise adjustment of the mirror mount with respect to each axis.

B66-10231
SOLAR CELL SUBMODULE DESIGN FACILITATES ASSEMBLY OF LIGHTWEIGHT ARRAYS
 YASUI, R. K. MAY 1966
 JPL-728

Solar cell submodules with bus bars that leave tabs along one end of the submodule and wires with raised portions along the other end are assembled by interlocking the tabs and wires of adjacent submodules. This structural design is lightweight and reliable and requires no metallic

substructure.

B66-10257
FREON PROVIDES HEAT TRANSFER FOR SOLID CO2 CALIBRATION STANDARD
 INNOVATOR NOT GIVEN /LEEDS AND NORTHRUP CO./ JUN. 1966
 M-FS-644

Acetone and Freon as liquid heat transfer mediums bring a dry ice bath to, and keep it at, the temperature required when using solid carbon dioxide as a calibration standard. Although acetone gives better results, Freon TF is preferred since acetone reacts violently in the presence of liquid oxygen.

B66-10263
OPTICAL DEVICE ENABLES SMALL DETECTOR TO SEE LARGE FIELD OF VIEW
 ARNDT, J. H. /TRW SPACE TECHNOL. LABS./ JUN. 1966
 W00-253

Optical device images the sun on a mask that transmits it or prevents its transmission to a photodetector behind the mask depending on image position on the mask. The device uses a pinhole as the image former to provide a large field of view and diffraction-limited resolution.

B66-10268
HIGH-SPEED FURNACE USES INFRARED RADIATION FOR CONTROLLED BRAZING
 ECKLES, P. N. /AEROJET-GEN. CORP./ JUN. 1966
 NU-0047

Furnace produces controlled heat for brazing and heat treating metals over a wide range of temperatures by using a near-infrared heat source positioned at one focus of an ellipsoidal reflector mounted below a cylindrical quartz chamber. This furnace maintains a pure atmosphere, has rapid heatup and cooldown, and permits visual observation.

03 MATERIALS (CHEMISTRY)

B66-10005
FLUORIDE COATINGS MAKE EFFECTIVE LUBRICANTS IN MOLTEN SODIUM ENVIRONMENT
 JAN. 1966 SEE ALSO NASA-TN-D-2348
 LEWIS-229

Coating bearing surfaces with calcium fluoride-barium fluoride film provides effective lubrication against sliding friction in molten sodium and other severe environments at high and low temperatures.

B66-10009
COILED SHEET METAL STRIP OPENS INTO TUBULAR CONFIGURATION
 PARK, J. J. JAN. 1966 SEE ALSO B64-10011
 GSFC-425

Copper alloy is converted into a spring material that can be rolled into a compact coil which will spontaneously open to form a tube in the long direction of the strip. The copper alloy is passed through a furnace at a prescribed temperature while restraining the strip in the desired tubular configuration.

B66-10024
ALUMINIZED FIBER GLASS INSULATION CONFORMS TO CURVED SURFACES
 INNOVATOR NOT GIVEN /N. AM. AVIATION/ JAN. 1966
 M-FS-477

Layers of fiber glass with outer reflective films of vacuum-deposited aluminum or other reflective metal, provide thermal insulation which conforms to curved surfaces. This insulation has good potential for cryogenic systems.

B66-10027
FLEXIBLE PROTECTIVE COATINGS MADE FROM SILICON-NITROGEN MATERIALS
 INNOVATOR NOT GIVEN /SOUTHERN RES. INST./ JAN. 1966
 M-FS-528

Flexible protective coatings formed from either of two polymers endure high temperatures for long periods. One polymer is a byproduct in hexaphenylcyclotrisilazane preparation, the other is obtained by heating bis/methylamino-/diphenylsilane.

B66-10029
EPOXY BLANKET PROTECTS MILLED PART DURING
EXPLOSIVE FORMING
INNOVATOR NOT GIVEN /N. AM. AVIATION/ JAN. 1966
M-FS-307

Epoxy blanket protects chemically milled or machined sections of large, complex structural parts during explosive forming. The blanket uniformly covers all exposed surfaces and fills any voids to support and protect the entire part.

B66-10033
ELECTRON BEAM SEALS OUTER SURFACES OF POROUS
BODIES
HERZ, W. H. /KULITE TUNGSTEN CO./ KURTZ, A. D.
KURTZ, R. A. FEB. 1966
M-FS-562

Porous tungsten plugs provide even airflow for frictionless bearings used in air bearing supported gyros. The plugs have their outer cylindrical surface sealed by an electron beam process to ensure unidirectional airflow through their exit ends.

B66-10037
PROCESS REDUCES PORE DIAMETERS TO PRODUCE
SUPERIOR FILTERS
TODD, H. H. /ELECTRO-OPT. SYSTEMS/ FEB. 1966
WOO-093

Porous metal structure with very small pore diameters is produced by heating the structure in oxygen for an oxidized surface layer, cooling it, and heating it in hydrogen to deoxidize the oxidized portion. Such structures are superior catalyst beds and filters.

B66-10043
POLYMER FILM EXHIBITS THERMAL AND RADIATION
STABILITY
BELL, V. L., JR. FEB. 1966
LANGLEY-100

Aromatic/heterocyclic polymers /Pyrrones/ have the ability to absorb large quantities of photolytic, thermal and radiolytic energies while retaining their useful properties. They are prepared from the room temperature reaction of tetraamines and tetraacids.

B66-10044
PROTECTIVE COATING WITHSTANDS HIGH TEMPERATURE
IN OXIDIZING ATMOSPHERE
MELLOR, C. H. /FENWAL, INC./ FEB. 1966
M-FS-529

Protective coating containing a plasma arc sprayed mixture of hafnium oxide and zirconium diboride will withstand high temperatures in an oxygen rich atmosphere. Used on a homogeneous tungsten thermocouple, it does not flake or crack on subsequent cooling and reheating, and does not degrade the thermocouple response time.

B66-10053
SPRAY-ON TECHNIQUE SIMPLIFIES FABRICATION OF
COMPLEX THERMAL INSULATION BLANKET
BOND, W. E. G. RAYMOND, R. /N. AM. AVIATION/
FEB. 1966
M-FS-497

Spray-on process constructs molds used in forming sections of thermal insulation blankets. The process simplifies the fabrication of blankets by eliminating much of the equipment formerly required and decreasing the time involved.

B66-10070
REFLECTIVE INSULATOR LAYERS SEPARATED BY
BONDED SILICA BEADS
ZUVER, N. T., JR. /GRUMMAN AIRCRAFT CORP./ FEB.
1966
MSC-215

Nonconductive silica beads are bonded to metallic reflecting insulation sheets prior to fabrication of multilayer reflectors. This eliminates the

need for separate nonconductive sheets and simplifies the fabrication process.

B66-10081
POLYTETRAFLUOROETHYLENE LUBRICATES BALL
BEARINGS IN VACUUM ENVIRONMENT
INNOVATOR NOT GIVEN /BENDIX CORP./ MAR. 1966
SEE ALSO NASA-SP-5014
M-FS-379

Polytetrafluoroethylene /PTFE/ balls are interspersed among steel ball bearings to provide a dry lubricant in a high vacuum environment. The steel balls are lubricated by the film worn off the PTFE balls.

B66-10083
CRYOSTAT MODIFIED TO AID ROTATING BEAM FATIGUE
TEST
DURHAM, T. F. /N. AM. AVIATION/ MAR. 1966
M-FS-435

Modified stainless steel dewar aids rotating beam fatigue test in a cryogenic environment. The dewar is modified to receive extended specimen supporting members through specially designed rotary seals. The test set can be fully enclosed and pressurized with an inert gas to make the system explosion proof.

B66-10087
SOLID-FILM LUBRICANT IS EFFECTIVE AT HIGH
TEMPERATURES IN VACUUM
SLINEY, H. E. MAR. 1966 SEE ALSO B63-10453 AND
B63-10562
LEWIS-228

Calcium fluoride with a suitable inorganic binder forms a stable solid-film lubricant when fused to the surface to be lubricated. It is effective in environments at elevated temperatures and gas pressures ranging from atmospheric to high vacuum. It is not stable in reducing atmospheres.

B66-10090
RADIOACTIVE TRACER SYSTEM DETECTS OIL
CONTAMINANTS IN FLUID LINES
ROTH, B. /N. AM. AVIATION/ MAR. 1966
M-FS-512

Radioactive tracer system continuously detects and monitors lubricating oil contamination in high pressure fluid lines.

B66-10104
VAPOR CONDENSATION PROCESS PRODUCES SLURRY OF
MAGNESIUM PARTICLES IN LIQUID HYDROCARBONS
PROK, G. M. WALSH, T. J. WITZKE, W. R. MAR.
1966
LEWIS-263

Vapor condensation apparatus produces a physically stable, homogeneous slurry of finely divided magnesium and liquid hydrocarbons. The magnesium is vaporized and the resultant vapor is cooled rapidly with a liquid hydrocarbon spray, which also serves as the dispersing medium for the condensed magnesium particles.

B66-10110
ETCHING PROCESS MILLS PH 14-8 MO ALLOY STEEL
TO PRECISE TOLERANCES
CHIPMAN, B. L. /N. AM. AVIATION/ MULLAND, P. W.
MAY 1966
MSC-270

Chemical milling process, which combines an aqua regia etchant with a sulfonate wetting agent, produces finishes on PH 14-8 molybdenum alloy steel to precise tolerances. This process permits precision removal of excess metal from the steel in annealed and/or aged conditions.

B66-10111
STORAGE-STABLE FOAMABLE POLYURETHANE IS
ACTIVATED BY HEAT
INNOVATOR NOT GIVEN /GOODYEAR AEROSPACE CORP./
MAY 1966
LANGLEY-187

Polyurethane foamable mixture remains inert in storage unit activated to produce a rapid foaming reaction. The storage-stable foamable composition is spread as a paste on the surface of an expandable structure and, when heated, yields a rigid open-cell polyurethane foam that is

self-bondable to the substrate.

B66-10119
SMALL, HIGH-INTENSITY FLASHER PERMITS
CONTINUOUS CLOSE-IN PHOTOGRAPHY
PASCALE, C. /PRINCETON UNIV./ MAR. 1966
NU-0043

Compact, high-intensity spark-flash unit is used as a light source for continuous rapid photography. The spark-breakdown flash source is enclosed in polymethylmethacrylate and incorporates a parabolic reflector.

B66-10120
OXYGEN-HYDROGEN TORCH IS A SMALL-SCALE
STEAM GENERATOR
MASKELL, C. E. /AEROJET-GEN. CORP./ MAR. 1966
NU-0042

Standard oxygen-hydrogen torch generates steam for corrosion-rate analysis of various metals. The steam is generated through local combustion inside a test chamber under constant temperature and pressure control.

B66-10131
SURFACTANT FOR DYE-PENETRANT INSPECTION IS
INSENSITIVE TO LIQUID OXYGEN
INNOVATOR NOT GIVEN /N. AM. AVIATION/ MAR. 1966
M-FS-475

LOX insensitive solvent is blended into a mixture of commercially available surfactants to clean metal surfaces which are to be investigated by the dye-penetrant method. The surfactant mixture is applied before and after application of the dye.

B66-10138
BISMUTH ALLOY POTTING SEALS ALUMINUM CONNECTOR
IN CRYOGENIC APPLICATION
FLOWER, J. F. /DOUGLAS AIRCRAFT CO./ STAFFORD,
R. L. APR. 1966
WOO-260

Bismuth alloy potting seals feedthrough electrical connector for instrumentation within a pressurized vessel filled with cryogenic liquids. The seal combines the transformation of high-bismuth content alloys with the thermal contraction of an external aluminum tube.

B66-10139
HOT-WIRE DETECTOR FOR CHEMICALLY ACTIVE
MATERIALS USED IN GAS CHROMATOGRAPHY
INNOVATOR NOT GIVEN /N. AM. AVIATION/ APR. 1966
MSC-269

Hot-filament detector analyzes chemically active materials used in gas chromatography. The detector reacts chemically with the effluent vapors in the gas chromatographic apparatus to change the electrical resistance of the filament as a function of the affluent composition. Due to the changes produced by chemical action on the filament, the system is often calibrated.

B66-10140
CORROSION OF METAL SAMPLES RAPIDLY MEASURED
MASKELL, C. E. /AEROJET-GEN. CORP./ APR. 1966
NU-0041

Corrosion of a large number of metal samples that have been exposed to controlled environment is accurately and rapidly measured. Wire samples of the metal are embedded in clear plastic and sectioned for microexamination. Unexposed wire can be included in the matrix as a reference.

B66-10165
GALLIUM ALLOY FILMS INVESTIGATED FOR USE
AS BOUNDARY LUBRICANTS
APR. 1966 SEE ALSO NASA-TN-D-2721 AND B63-10337
LEWIS-245

Gallium alloyed with other low melting point metals has excellent lubricant properties of fluidity and low vapor pressure for high temperature or vacuum environments. The addition of other soft metals reduces the corrosivity and formation of undesirable alloys normally found with gallium.

B66-10166
DISPENSER LEAK-TESTS AND STERILIZES RUBBER
GLOVES

INNOVATOR NOT GIVEN /N. AM. AVIATION/ APR. 1966
MSC-285

Portable vacuum-operated apparatus leak-tests and sterilizes rubber gloves. The gloves are fitted to the hands directly from the apparatus without external handling.

B66-10185
IMPROVED ADHESIVE FOR CRYOGENIC APPLICATIONS
CURES AT ROOM TEMPERATURE
KLINGER, H. J. SMITH, M. B. /TELECOMPUTING
CORP./ MAY 1966
WOO-132

Adhesive cured at room temperature provides an effective adhesive bond over the range from room temperature down to the temperature of liquid hydrogen. The adhesive consists of one part of 200-mesh powdered nylon filler to two parts of an epoxy-polyamine resin.

B66-10194
SILAZANE POLYMERS SHOW PROMISE FOR HIGH-
TEMPERATURE APPLICATION
JUN. 1966 SEE ALSO NASA-SP-5030
M-FS-466

Several silazane intermediate compounds and polymers have been prepared which are potentially useful as high temperature coatings and elastomers. These silazane polymers exhibit stability in a temperature range of 300 to 400 degrees C.

B66-10196
FIBERS OF NEWLY DEVELOPED REFRACTORY CERAMICS
PRODUCED BY IMPROVED PROCESS
INNOVATOR NOT GIVEN /HUGHES AIRCRAFT CO./ MAY
1966
WOO-169

Rods of refractory ceramic material and glasses having relatively high fusion temperatures and tensile strengths are converted to fiber by subjecting these rods to alternate fusion and gas-jet bursts. The refractory, high-tensile-strength fibers produced are combined with suitable binder to produce heat-resistant fabrics and rigid structures.

B66-10207
WHITE PRIMER PERMITS A CORROSION-RESISTANT
COATING OF MINIMUM WEIGHT
ALBRECHT, R. H. JENSEN, D. P. SCHNAKE, P.
/SHERWIN WILLIAMS CO./ MAY 1966
M-FS-304

White primer for coating 2219 aluminum alloy supplies a base for a top coating of enamel. A formulation of pigments and vehicle results in a primer with high corrosion resistance and minimum film thickness.

B66-10221
SUBMICRON METAL POWDERS PRODUCED BY BALL
MILLING WITH GRINDING AIDS
QUATINETZ, M. SCHAFER, R. J. MAY 1966 SEE ALSO
NASA-TN-D-879
LEWIS-188

In ball milling metal powders to submicron size, various salts are more effective as grinding aids than conventional surfactants. Absolute ethyl alcohol is used as the grinding liquid.

B66-10222
NICKEL-BASE SUPERALLOYS DEVELOPED FOR HIGH-
TEMPERATURE APPLICATIONS
FRECH, J. C. MAY 1966 SEE ALSO
NASA-MEMO-4-13-59E, NASA-TN-D-260,
NASA-TN-D-1531, AND NASA-TN-D-2495
LEWIS-226

Class of nickel-base superalloys containing varying percentages of alloying elements have good workability and high strength at elevated temperatures /1500 to 2200 degrees F/.

B66-10227
CHROMIUM OXIDE COATINGS IMPROVE THERMAL
EMISSION OF ALUMINA
UPSHAW, V. /HUGHES AIRCRAFT CO./ MAY 1966
WOO-263

Chromium oxide coatings improve thermal radiation characteristics of alumina-coated heater-cathode

systems in vacuum tubes. Chromium oxide is applied either as a surface layer or as a doping material. The new coatings eliminate the high-temperature migration problems of carbon surface treatments.

B66-10230

ELECTRIC ARC HEATER IS SELF STARTING

BROWN, R. D. MAY 1966

LANGLEY-208

Remote method initiates an electric arc over a large range of gaps between two water-cooled electrodes of an arc-heated wind tunnel without disassembling the arc unit. This type of starting system can be used on both three-phase ac arc heaters and dc arc heaters.

B66-10234

STANDARDS FOR ELECTRON PROBE MICROANALYSIS OF

SILICATES PREPARED BY CONVENIENT METHOD

WALTER, L. S. JUN. 1966

GSFC-469

Standard compositions suitable for electron probe microanalysis of various silicates are prepared by coprecipitation of specified salts with colloidal silica to form a gel which is decomposed into a powdered oxide mixture and compressed into thin pellets. These pellets of predetermined standard are compared with a silicate sample to determine its composition.

B66-10256

DRY FILM LUBRICANT IS EFFECTIVE AT EXTREME

LOADS

INNOVATOR NOT GIVEN /MIDWEST RES. INST./ JUN.

1966 SEE ALSO NASA-TM-X-53331

M-FS-628

Dry film lubricant protects low speed sliding surfaces under extreme loading. The lubricant in an inorganic binder is applied to substrates with sufficient hardness to prevent surface deformation in the applicable load range.

B66-10259

SUBSTITUTED SILANE-DIOL POLYMERS HAVE

IMPROVED THERMAL STABILITY

BYRD, J. D. CURRY, J. E. JUN. 1966

M-FS-469

Organosilicon polymers were synthesized to produce improved physical and chemical properties, including high thermal stability. Of the polymers produced, poly(4, 4 prime-bisoxymethyl-phenylene/diphenylsilane, formed from bis(anilino)diphenylsilane and p, p prime-biphenol, was found to have the most desirable properties.

B66-10273

BORON-DEOXIDIZED COPPER WITHSTANDS BRAZING

TEMPERATURES

SCHMIDT, E. H. /N. AM. AVIATION/ JUN. 1966

M-FS-762

Boron-deoxidized high-conductivity copper is used for fabrication of heat transfer components that are brazed in a hydrogen atmosphere. This copper has high strength and ductility at elevated temperatures and does not exhibit massive intergranular failure.

B66-10281

VAPOR DIFFUSION ELECTRODE IMPROVES FUEL CELL

OPERATION

SMITH, J. O. /MONSANTO RES. CORP./ JUN. 1966

LEWIS-187

Vapor diffusion type fuel cell electrode presents a nonwetting barrier to the liquid feedstocks so they may contact the electrolyte only in the vapor state. Thus, it effects feedstock mixing with the electrolyte at the electrolyte/catalyst interface but prevents feedstock decomposition and catalyst poisoning from liquid mingling.

B66-10288

IMPROVED THERMAL INSULATION MATERIALS MADE OF

FOAMED REFRACTORY OXIDES

MOUNTVALA, A. J. NAKAMURA, H. H. RECHTER, H. L.

/IIT RES. INST./ JUN. 1966 SEE ALSO B65-10357

M-FS-735

Foamed refractory oxides provide lightweight,

reflective thermal insulation materials. The materials have a low bulk density and high thermal shock resistance.

04 LIFE SCIENCES

B66-10049

IMPROVED ELECTRODE PASTE PROVIDES RELIABLE MEASUREMENT OF GALVANIC SKIN RESPONSE

DAY, J. L. FEB. 1966 SEE ALSO B64-10025 AND

B65-10015

MSC-146

High-conductivity electrode paste is used in obtaining accurate skin resistance or skin potential measurements. The paste is isotonic to perspiration, is nonirritating and nonsensitizing, and has an extended shelf life.

B66-10117

MICROORGANISMS DETECTED BY ENZYME-CATALYZED REACTION

VANGO, S. P. WEETALL, H. H. WELIKY, N. MAR.

1966

JPL-782

Enzymes detect the presence of microorganisms in soils. The enzyme lysozyme is used to release the enzyme catalase from the microorganisms in a soil sample. The catalase catalyzes the decomposition of added hydrogen peroxide to produce oxygen which is detected manometrically. The partial pressure of the oxygen serves as an index of the sample's bacteria content.

B66-10118

INTEGRAL SKIN ELECTRODE FOR

ELECTROCARDIOGRAPHY IS EXPENDABLE

INNOVATOR NOT GIVEN /N. AM. AVIATION/ MAR. 1966

MSC-299

Inexpensive, expendable skin electrode for use in electrocardiography combines an electrical contact, conductive paste, and a skin-attachment adhesive. Application of the electrode requires only degreasing of the skin area.

B66-10154

PHONOCARDIOGRAPH SYSTEM MONITORS HEART SOUNDS

INNOVATOR NOT GIVEN /BECKMAN INSTR., INC./ APR.

1966

MSC-185

Phonocardiograph system monitors the mechanical activity of the heart in extreme environments. It uses a piezoelectric-crystal microphone with an integral preamplifier, and a signal conditioner having special frequency characteristics. The output signals can be recorded on tape, presented aurally, or transmitted telemetrically to a remote station.

B66-10184

SELF-INFLATING LIFEVEST STORES IN SMALL

PACKAGE

RADNOFSKY, M. I. MAY 1966

MSC-5A

Emergency lifevest is inflated with carbon dioxide from a self-contained cartridge in 10 seconds. When deflated, it fits into a package occupying less than 20 cubic inches and weighing less than one pound.

B66-10252

SEMICONDUCTOR FORMS BIOMEDICAL RADIATION PROBE

BURNS, F. P. FRIEDERICKS, J. E. /SOLID STATE

RADIATION, INC./ JUN. 1966

MSC-320

Semiconductor radiation dosimeter in the form of a slender probe is easily inserted into body tissue. The probe has a signal-to-noise ratio that is acceptable to recording equipment and provides realistic measurements of the spatial and energy distributions of radiant electrons and protons.

05 MECHANICAL

B66-10001

FORMING TOOL IMPROVES QUALITY OF TUBING FLARES
INNOVATOR NOT GIVEN /GEN. DYN./ASTRONAUTICS/ JAN. 1966

W00-231

Punch and die set improves the quality of tubing flares for use with standard flared-tube fittings in high-pressure systems. It forges a dimensionally accurate flare in the tubing and forces more tubing material into the high-stress areas to improve the strength and tightness of the tubing connection.

B66-10003

IMPROVED TOOL EASILY REMOVES BRAZED TUBE CONNECTORS

SCHOPPMAN, R. A. /MCDONNELL AIRCRAFT CORP./ JAN. 1966

MSC-263

Portable, compact tool quickly and cleanly removes brazed connectors from system tubes. The tool uses an induction coil to melt the braze and a compression spring to automatically separate the connection. An inert gas is force-fed about the heated area to prevent oxidation of the tube.

B66-10007

FLOATING DEVICE ALIGNS BLIND CONNECTIONS

RESEL, J. E. /N. AM. AVIATION/ JAN. 1966

MSC-256

Panel-mounted connectors overcome the misalignment of blind connectors in electronic rack mounted equipment. The connector is free to move in the vertical direction by the action of a parallelogram mount. This freedom of motion maintains the guide pin hole centerline parallel to the guide pin centerline at all times.

B66-10011

TORQUE WRENCH DESIGNED FOR RESTRICTED AREAS

FAGERBERG, E. R. /LOCKHEED MISSILES AND SPACE CO./ JAN. 1966

LEWIS-246

Wrench with twisting handle grip applies torque to a fastener in a restricted area. The wrench handle may be any length without affecting output torque.

B66-10014

EXPLOSIVE FORCE OF PRIMACORD GRID FORMS LARGE SHEET METAL PARTS

INNOVATOR NOT GIVEN /N. AM. AVIATION/ JAN. 1966

SEE ALSO NASA-SP-5017

M-FS-316

Primacord which is woven through fish netting in a grid pattern is used for explosive forming of large sheet metal parts. The explosive force generated by the Primacord detonation is uniformly distributed over the entire surface of the sheet metal workpiece.

B66-10018

COMPACT RETRACTOR PROTECTS CABLING LOOPS

INNOVATOR NOT GIVEN /N. AM. AVIATION/ JAN. 1966

M-FS-561

Core and swivel retractor mechanism combined with cable stiffeners provides compact, long-wearing protection for cabling loops in cabinet-mounted electronic equipment drawers.

B66-10019

BUOYANT STOKES LITTER ASSEMBLY USED FOR SEA RESCUE OPERATIONS

POLLARD, R. A. SHEWMAKE, G. A. JAN. 1966

MSC-131

Standard Stokes litter is fastened to inflatable flotation units for sea rescue operations. The assembly keeps an injured person immobilized during transportation to a first aid station.

B66-10020

O-RING TUBE FITTINGS FORM LEAKPROOF SEAL IN HYDRAULIC SYSTEMS

INNOVATOR NOT GIVEN /N. AM. AVIATION/ JAN. 1966

M-FS-481

Leakproof fittings for hydraulic systems are designed to be welded to the ends of the tubing to be joined and mated to form a seal with one O-ring at the joint. Since the fittings are coupled at only one joint, they tend to be more reliable than standard fittings coupled at two joints.

B66-10022

RING VALVE RESPONDS TO DIFFERENTIAL PRESSURE CHANGES

INNOVATOR NOT GIVEN /N. AM. AVIATION/ JAN. 1966

W00-247

Pressure valve has a moving annular ring seal that automatically reacts to differential pressure changes across the seat. This valve has good potential for the petroleum and chemical industries.

B66-10023

SIMPLE KEY LOCKS TURBINE ROTOR BLADES

INNOVATOR NOT GIVEN /N. AM. AVIATION/ JAN. 1966

W00-103

Symmetrical, cruciform key has end tabs which bend up to lock turbine rotor blades against axial displacement. The key locks without introducing aerodynamic resistance or upsetting rotor balance.

B66-10030

FRICTION DEVICE DAMPS LINEAR MOTION OF ROTATING SHAFT

INNOVATOR NOT GIVEN /N. AM. AVIATION/ JAN. 1966

W00-214

Damping device checks the axial motion of a rotating shaft by exerting a controllable, radial frictional load to the outer race of the ball bearing in which the shaft is mounted. The device can be used as a soft bearing mount to damp resonant frequencies at critical shaft speed.

B66-10032

SHEET METAL STRIP UNROLLS TO FORM CIRCULAR BOOM

INNOVATOR NOT GIVEN /MELPAR, INC./ JAN. 1966

GSFC-423

Preformed metal strip, coiled flat on a storage drum, unrolls to form a cylindrical boom. Tabs and slots on opposite sides of the strip interlock to form a continuous circular cross section. This retractable boom can be used as a spacecraft antenna, gravity gradient, or positioning device.

B66-10035

RESILIENT CLAMP HOLDS FUEL CELL STACK THROUGH THERMAL CYCLE

SHINN, B. H. /UNITED AIRCRAFT CORP./ FEB. 1966

MSC-313

Resilient clamping device holds a stack of fuel cells during thermal expansion and contraction periods. The clamp has torsion bar action which maintains seal integrity over a wide stress range.

B66-10040

ASSEMBLY JIG ASSURES RELIABLE SOLAR CELL MODULES

OFARRELL, H. O. /TRW SPACE TECHNOL. LABS./ FEB. 1966

GSFC-455

Assembly jig holds the components for a solar cell module in place as the assembly is soldered and bonded by the even heat of an oven. The jig is designed to the configuration of the planned module. It eliminates uneven thermal conditions caused by hand soldering methods.

B66-10047

HEATED DIE FACILITATES TUNGSTEN FORMING

CHATTIN, J. H. HAYSTRICK, J. E. LAUGHLIN, J. C.

LEIDY, R. A. FEB. 1966

LEWIS-25A

Tungsten forming in a press brake employs a bottom die assembly with a heating manifold between two water-cooled die sections. The manifold has hydrogen-oxygen burners spaced along its length for even heat during forming.

B66-10052
COMBUSTION CHAMBER INLET MANIFOLD SEPARATES
VAPOR FROM LIQUID
BAKER, D. I. /N. AM. AVIATION/ FEB. 1966 SEE
ALSO B63-10251
M-FS-531

Circular manifold with tangential orifices at the inner circumference provides for the vapor constituent of a vaporized cryogenic propellant to enter a rocket combustion chamber before the liquid constituent. The vapor is separated from the liquid by centrifugal action and precedes it into the chamber through carefully positioned orifices.

B66-10054
MODIFIED POWER TOOL RAPIDLY DRIVES SERIES
TORQUE BOLTS
INNOVATOR NOT GIVEN /N. AM. AVIATION/ FEB. 1966
MSC-221

Feeder attachment, which fits on a standard power driver, drives a series of longitudinally attached torque bolts into place with great speed. It allows loading of a series of bolts and then positions individual bolts in the driving head for assembly. The attachment contains a socket gun which may be modified to accommodate different types and sizes of bolts.

B66-10055
HYDROGEN-ATMOSPHERE INDUCTION FURNACE HAS
INCREASED TEMPERATURE RANGE
CAVES, R. M. GRESSLIN, C. H. FEB. 1966
LEWIS-153

Improved hydrogen-atmosphere induction furnace operates at temperatures up to 5,350 deg. F. The furnace heats up from room temperature to 4,750 deg. F in 30 seconds and cools down to room temperature in 2 minutes.

B66-10056
BENCH VISE ADAPTER GRIPS TUBING SECURELY AND
SAFELY
HOWLAND, B. T. JONES, A. S., JR. /N. AM.
AVIATION/ FEB. 1966
MSC-279

Plastic self-compressing adapter with grooves, attached to the jaws of a bench vise, secures thin-wall tubing vertically or horizontally during cutting and flaring operations without marring or damaging it. Magnets incorporated in both sections of the adapter prevent detachment from the jaws when the vise is opened.

B66-10059
CALIBRATED CLAMP FACILITATES PRESSURE
APPLICATION
INNOVATOR NOT GIVEN /N. AM. AVIATION/ FEB. 1966
MSC-298

Spring-loaded clamp applies specific pressure to hold materials together during bonding, welding, and machining. The clamp has two adjustable legs terminating in suction cups for easy attachment to a surface.

B66-10061
INSTRUMENT QUICKLY TRANSPOSES GROUND REFERENCE
TARGET TO EYE LEVEL
GREEN, B. E. VAN DEVENTER, E. L. /N. AM.
AVIATION/ FEB. 1966
MSC-275

Optical alignment of equipment is facilitated by a traverse target with a string suspending a plumb bob to transpose the ground level point to eye-level operation. This instrument appreciably decreases the time required from the present method but achieves the same degree of precision.

B66-10063
TENSILE-STRENGTH APPARATUS APPLIES HIGH
STRAIN-RATE LOADING WITH MINIMUM SHOCK
COTRILL, H. E., JR. MAC GLASHAN, W. F., JR. FEB.
1966

JPL-28 JPL-29
Tensile-strength testing apparatus employs a capillary bundle through which a noncompressible fluid is extruded and a quick-release valve system. This apparatus applies the test loads at relatively constant very high strain rates with

minimal shock and vibration to the tensile specimen and apparatus.

B66-10065
T-HANDLE WRENCH HAS TORQUE-LIMITING ACTION
KEMPLE, S. B. /N. AM. AVIATION/ FEB. 1966
MSC-280

T-handle wrench can be preset to release when a certain torque value is exceeded by means of a spring-loaded roller and groove torque-limiting mechanism contained in the handle of the wrench. The wrench is also equipped with a push button in the handle that permits the operator to lock the handle to the spindle shaft, thus eliminating the torque-limiting function.

B66-10069
RUN-IN WITH CHEMICAL ADDITIVE PROTECTS GEAR
SURFACE
HARTMAN, M. A. /N. AM. AVIATION/ FEB. 1966
M-FS-548

Run-in treatment provides a protective coating on turbopump gear surfaces so that they are capable of operation under marginal conditions in mineral oil and diester lubricants. This treatment protects highly loaded gears during relatively short-term operation.

B66-10071
MECHANISM ISOLATES LOAD WEIGHING CELL DURING
LIFTING OF LOAD
HAIGLER, J. S. /N. AM. AVIATION/ FEB. 1966
MSC-297

Load weighing cell used in conjunction with a hoist is isolated during lifting and manipulation of the load. A simple mechanism, attached to a crane hook, provides a screw adjustment for engaging the load cell during weighing of the load and isolating it from lift forces during hoisting of the load.

B66-10073
CALCULATIONS ENABLE OPTIMUM DESIGN OF
MAGNETIC BRAKE
KOSMAHL, H. G. FEB. 1966
LEWIS-251

Mathematical analysis and computations determine optimum magnetic coil configurations for a magnetic brake which controllably decelerates a free falling load to a soft stop. Calculations on unconventionally wound coils determine the required parameters for the desired deceleration with minimum electrical energy supplied to the stationary coil.

B66-10074
THREADED PILOT INSURES CUTTING TOOL
ALIGNMENT
GOLDMAN, R. /N. AM. AVIATION/ SCHNEIDER, W. E.
FEB. 1966
M-FS-527

Threaded pilot allows machining of a port component, or boss, after the reciprocating hole has been threaded. It is used to align cutting surfaces with the boss threads, thus insuring precision alignment.

B66-10076
SHOULDER ADAPTER STEADIES SPOT WELDING GUN
LOVE, T. H. MAR. 1966
M-FS-321

Shoulder adapter fits on one end of a hand-held spot welding gun. With the adapter, the operator can hold the gun steadily at uniform pressure to ensure defect-free welds.

B66-10077
PLUGGED HOLLOW SHAFT MAKES FATIGUE-RESISTANT
SHEAR PIN
HANKINSON, T. W. E. MAR. 1966
LANGLEY-195

Shear pin coupling with plugged hollow shaft provides required load capacity for shaft protection and has no groove to induce fatigue failure.

B66-10078
THERMAL MOTOR POSITIONS MAGNETOMETER SENSORS
KERWIN, W. J. SCOTT, S. G. MAR. 1966

ARC-51

Reversing, thermal, motor-driven device positions magnetometer sensors for checking zero offset. The device alternately positions two sensors at fixed positions 90 degrees apart. The thermal motor is fabricated completely of nonmagnetic materials.

B66-10080

NYLON SHOCK ABSORBER PREVENTS INJURY TO PARACHUTE JUMPERS

MANDEL, J. A. /GOODYEAR AEROSPACE CORP./ MAR. 1966

MSC-226

Nylon shock absorbers reduce the canopy-opening shock of a parachute to a level that protects the wearer from injury. A shock absorber is mounted on each of the four risers between the shroud lines and the harness. Because of their size and location, they pose no problem in repacking the chute and harness after a jump.

B66-10092

FINGERTIP CURRENT CONTROL FACILITATES USE OF ARC WELDING GUN

ROTH, E. /N. AM. AVIATION/ MAR. 1966

MSC-289

Fingertip-operated trigger accurately controls the current supplied to an arc welding gun. The trigger is mounted directly on the handle of the gun.

B66-10093

TOOL PROVIDES CONSTANT PURGE DURING TUBE WELDING

LANG, E. R. /N. AM. AVIATION/ MAR. 1966

M-FS-547

Tool provides a constant purge of inert gas during in-place welding of tubular components to prevent contamination and oxidation. It also permits self-jigging of the tube and sleeve to be welded.

B66-10100

QUEUEING REGISTER USES FLUID LOGIC ELEMENTS INNOVATOR NOT GIVEN /UNIVAC DIV. OF SPERRY RAND/ MAR. 1966

M-FS-317

Queueing register /a multistage bit-shifting device/ uses a series of pure fluid elements to perform the required logic operations. The register has several stages of three-state pure fluid elements combined with two-input NOR gates.

B66-10102

PIPE CUTTING TOOL IS USEFUL IN LIMITED SPACE HEADLEY, C. A. /MCDONNELL AIRCRAFT CORP./

JONES, D. D. MAR. 1966

MSC-36

Portable pipe cutting tool is used in areas of limited space. The pipe is clamped in the tool and then cut by a rotating cutter assembly that is internally connected to a drive shaft engaged in the chuck of a portable electric drill. The tool is held in a fixed position during the cutting operation.

B66-10107

MECHANISM CONTINUOUSLY MEASURES STATIC AND DYNAMIC CABLE LOADS

MAR. 1966

MSC-217

Pulley mechanism measures the tensile loads on a cable under static and dynamic conditions, without disturbing the continuity of operation of the system. A set of takeoff pulleys are mounted on a pivoted frame that is linked to a strain gage which measures the frame displacement as a function of the static or dynamic tensile load on the cable.

B66-10115

SOLDERING TOOL HEATS WORKPIECES AND APPLIES SOLDER IN ONE OPERATION

GUDKESE, V. W. MAY 1966

LEWIS-247

Fountain-pen type soldering iron heats workpieces and applies solder to joints in densely packed electronics assemblies. The basic soldering tool is used with different-sized orifice tips,

eliminating the need for an assortment of conventional soldering guns.

B66-10116

TELESCOPING OF INSTRUMENTATION TUBING ELIMINATES SWAGING

MC CLELLAN, E. L. /N. AM. AVIATION/ MAY 1966

M-FS-546

Short sections of stainless steel tubing of slide-fit sizes fitted together and silver-soldered at the junctions form small-diameter tubing assemblies with accurately stepped-down dimensions. This method of fabrication eliminates the costly swaging operations formerly used.

B66-10123

HAND DRILL ADAPTER LIMITS HOLES TO DESIRED DEPTH

INNOVATOR NOT GIVEN /N. AM. AVIATION/ MAR. 1966

MSC-346

Adjustable adapter fastened to the shank of a drill bit limits the depth of bored holes. The adapter may be made in sizes appropriate for bits of different diameters.

B66-10124

ECONOMICAL AND MAINTENANCE-FREE GAS SYSTEM OPERATES RAILROAD SWITCHES

VISSING, G. S. MAR. 1966

NU-0045

Remote control system that uses bottled nitrogen as a power source operates infrequently used railroad switches. This system is economical and maintenance free.

B66-10125

ALUMINUM OXIDE FILLER PREVENTS OBSTRUCTIONS IN TUBING DURING WELDING

OKELLY, K. P. MAR. 1966

MSC-222

Granular aluminum oxide is used as filler in serpentine tubing while welding the tubing to a flat surface. The filler eliminates obstructions in the tubes formed by molten weld nuggets and is porous enough to allow gases to escape from the welding area.

B66-10132

EXPANDABLE INSERT SERVES AS SCREW ANCHOR

INNOVATOR NOT GIVEN /N. AM. AVIATION/ MAR. 1966

MSC-301

Expandable self-locking adapter secures components to panels having one accessible side. Mounting holes in the panels may not be threaded to accommodate screws, therefore, the adapter contains a female thread that will mate a mounting screw.

B66-10135

CHART CASE OPENS TO FORM BRIEFING EASEL

NELSON, R. A. /N. AM. AVIATION/ APR. 1966

MSC-349

Aluminum carrying case protects charts during transit and opens to form a rigid easel for their presentation. Looseleaf clamps hold the charts in place for both carrying and displaying them.

B66-10136

CRYOGENIC TRAP VALVE HAS NO MOVING PARTS

BRANUM, L. W. WELLS, G. /N. AM. AVIATION/ APR. 1966

M-FS-487

Aluminum-body trap valve with an invar stem keeps cryogenic materials in the liquid state while entering the final component of a system. The valve has no moving parts and is self-actuated and self-monitoring.

B66-10137

ROTATING MANDREL SPEEDS ASSEMBLY OF PLASTIC INFLATABLES

MAC FADDEN, J. A. /SCHJELDAHL /G. T./ CO./

STENLUND, S. J. WENDT, A. J. APR. 1966

LANGLEY-155

Rotating mandrel permits the accurate cutting, forming, and sealing of plastic gores for assembly of an inflatable surface of revolution. The gores remain on the mandrel until the final seam is reached. Tolerances are tightly controlled by

the mandrel configuration.

B66-10145
PORTABLE POWER TOOL MACHINES WELD JOINTS IN FIELD

SPIER, H. A. APR. 1966
M-FS-258

Portable routing machine for cutting precise weld joints required by nonstandard pipe sections used in the field for transfer of cryogenic fluids. This tool is adaptable for various sizes of pipes and has a selection of router bits for different joint configurations.

B66-10146
EXTENDABLE MAST USED IN ONE SHOT SOIL PENETROMETER

HOTZ, G. M. HOWARD, G. A. APR. 1966
JPL-685

Penetrometer to test soil characteristics has a piercing head with soil instrumentation equipment attached to an expandable mast actuated by compressed air. The penetrometer gives continuous measurements as the mast pushes the piercing head through the soil.

B66-10149
DEPTH INDICATOR AND STOP AID MACHINING TO PRECISE TOLERANCES

LAVERY, J. L. /N. AM. AVIATION/ APR. 1966
M-FS-553

Attachment for machine tools provides a visual indication of the depth of cut and a positive stop to prevent overcutting. This attachment is used with drill presses, vertical milling machines, and jig borers.

B66-10150
MOUNTING FACILITATES REMOVAL AND INSTALLATION OF FLAME-DETECTOR RODS

CASTLE, F. /N. AM. AVIATION/ APR. 1966
M-FS-555

Flame-detector-rod holder is easily removed from the wall of a gas-fired furnace for maintenance or replacement of the detector rod without requiring shutdown of the furnace. The holder consists of an externally threaded outer bushing, a sleeve which is held inside the outer bushing with a set screw, and a detector rod assembly which screws into the sleeve.

B66-10151
SPLIT GLASS TUBE ASSURES QUALITY IN ELECTRON BEAM BRAZING

KRESSIN, W. J. /N. AM. AVIATION/ APR. 1966
M-FS-564

Sealed enclosure of heat-resistant glass tubing and silicone rubber molds provide good visibility for electron beam brazing of metal tubes in an inert gas atmosphere. The glass tubing and rubber molds, which are bonded together, are easily applied to and removed from the brazing area by operation of a clamp.

B66-10152
NYLON BIT REMOVES CORK INSULATION WITHOUT DAMAGE TO SUBSTRATE

CRANDALL, J. C. /N. AM. AVIATION/ APR. 1966
MSC-381

Nylon router bit in an electric hand-held drill removes small quantities of cork insulation from a metal or fiberglass surface without cutting or scratching the surface.

B66-10155
SIMPLE DEVICE FACILITATES INERT-GAS WELDING OF TUBES

CARRITHERS, K. V. /N. AM. AVIATION/ KELLEY, W. B. APR. 1966
M-FS-558

Metal Y-tube simultaneously directs argon streams over weld areas on both sides of tubes being joined along a line on their outer periphery. The device is advanced along the junction in step with the welding operation.

B66-10167
DUAL REGULATOR CONTROLS TWO GASES FROM A SINGLE REFERENCE

JACKSON, K. /GARRETT CORP./ APR. 1966
MSC-227

Dual-pressure regulator uses single reference for parallel control of two gases. The regulator uses an external fluid pressure to modulate the flow of one gas, and the regulated flow of the first gas to modulate the flow of the second.

B66-10168
SAFETY SWITCH PERMITS EMERGENCY BRIDGE CRANE SHUTDOWN

LONG, E. J. R. /N. AM. AVIATION/ APR. 1966
M-FS-549

Safety switch on a crane control pendant must be held closed to operate the crane. This provides for immediate power cutoff to the crane in an emergency or a pendant circuit failure.

B66-10169
MODIFIED DRILL PERMITS ONE-STEP DRILLING OPERATION

LIBERTONE, C. /N. AM. AVIATION/ APR. 1966
M-FS-559

Drill with modified cutting faces permits one-step drilling operation without chatter upon contact and premature wear. The modification of the drill, which has the same diameter as that of the desired hole, consists of a groove across the bottom of each of the cutting faces of the drill flutes.

B66-10171
MULTISURFACE FIXTURE PERMITS EASY GRINDING OF TOOL BIT ANGLES

JONES, C. R. /N. AM. AVIATION/ APR. 1966
M-FS-586

Multisurface fixture with a tool holder permits accurate grinding and finishing of right- and left-hand single point threading tools. All angles are ground by changing the fixture position to rest at various reference angles without removing the tool from the holder.

B66-10172
FLEXIBLE COILED SPLINE SECURELY JOINS MATING CYLINDERS

COPPERNOL, R. W. /GEN. DYN. /ASTRONAUTICS/ APR. 1966
WOO-270

Mating cylindrical members are joined by spline to form an integral structure. The spline is made of tightly coiled, high-tensile-strength steel spiral wire that fits a groove between the mating members. It provides a continuous bearing surface for axial thrust between the members.

B66-10174
EPOXY-COATED CONTAINERS EASILY OPENED BY WIRE BAND

MC COY, J. W. /N. AM. AVIATION/ APR. 1966
M-FS-592

Epoxy coating reduces punctures, abrasions, and contamination of synthetic cellular containers used for shipping and storing fragile goods and equipment. A wire band is wound around the closure joint, followed by the epoxy coating. The container can then be easily opened by pulling the wire through the epoxy around the joint.

B66-10175
DEVICE SPOT-LAPS SPHERES TO VERY CLOSE TOLERANCES

AVERY, H. W. /GE/ MAY 1966
JPL-SC-119

Device laps precise amounts of metal from high spots on a spherical body to correct minute surface imperfections. The device generates the lapped surface with reference to an existing true surface on the spherical workpiece. Lapping is performed by applying a rotary and oscillatory motion to the workpiece while the lapping tool is held on the workpiece high spot.

B66-10176
LIFTING CLAMP POSITIVELY GRIPS STRUCTURAL SHAPES

REINHARDT, E. C. MAY 1966
M-FS-593

Welded steel clamps securely grip structural

shapes of various sizes for crane operations. The clamp has adjustable clamping jaws and screw-operated internal V-jaws and provides greater safety than hoisting slings presently used. The structural member can be rotated in any manner, angle, or direction without being released by the clamp.

B66-10188
CONTROL SYSTEM MAINTAINS COMPARTMENT AT
CONSTANT TEMPERATURE
LINDBERG, J. G. /N. AM. AVIATION/ MAY 1966
JPL-SC-145

Gas-filled permeable insulating material maintains an enclosed compartment at a uniform temperature. The material is interposed between the two walls of a double-walled enclosure surrounding the compartment.

B66-10189
PNEUMATIC SHUTOFF AND TIME-DELAY VALVE
OPERATES AT CONTROLLED RATE
HORNING, J. L. TOMLINSON, L. E. /N. AM.
AVIATION/ MAY 1966
M-FS-602

Shutoff and time delay valve, which incorporates a metering spool that moves at constant velocity under pneumatic pressure and spring compression, increases fluid-flow area at a uniform rate. Diaphragm areas, control cavity volume, and bleed-orifice size may be varied to give any desired combination of time delay and spool travel time.

B66-10190
BELLOWS DESIGN FEATURES LOW SPRING RATE AND
LONG LIFE
LUSIC, R. F. /N. AM. AVIATION/ MAY 1966
MSC-521

High pressure bellows has high strength rigid hoops for strength and stability and sheet stock for low spring rate effects. The simplicity of this bellows design facilitates mass production.

B66-10191
TOOL POST MODIFICATION ALLOWS EASY TURRET
LATHE CUTTING-TOOL ALIGNMENT
FOOTS, L. /N. AM. AVIATION/ MAY 1966
M-FS-581

Modified tool holder and tool post permit alignment of turret lathe cutting tools on the center of the spindle. The tool is aligned with the spindle by the holder which is kept in position by a hydraulic lock-in feature of the tool post. The tool post is used on horizontal and vertical turret lathes and other engine lathes.

B66-10195
SEGMENTED BALL VALVE IS EASY TO OPEN AND CLOSE
PRONO, E. SHINAULT, L. H. /N. AM. AVIATION/
SPEISMAN, C. JUN. 1966
W00-248

Segmented ball valve and flowmeter in the same spherical housing provide a valve that will handle large fluid volume without bulkiness and weight of blade valves or conventional ball valves. The valve is easily opened or closed and the flowmeter remains stationary, so errors are eliminated.

B66-10197
INTERMEDIATE ROTATING RING IMPROVES
RELIABILITY OF DYNAMIC SHAFT SEAL
MESNY, P. R. /N. AM. AVIATION/ MAY 1966
M-FS-575

Intermediate rotating ring improves the reliability of dynamic shaft seals whose rubbing surfaces wear down rapidly at high shaft speeds. The rotating ring is placed between the rotating shaft sealing surfaces and the stationary surface, and driven at one-half the shaft speed.

B66-10201
SELF-CONTAINED CLOTHING SYSTEM PROVIDES
PROTECTION AGAINST HAZARDOUS ENVIRONMENTS
INNOVATOR NOT GIVEN /GARRETT CORP./ MAY 1965
M-FS-536

Self-contained clothing system protects personnel against hazardous environments. The clothing has

an environmental control system and a complete protection envelope consisting of an outer garment, inner garment, underwear, boots, gloves, and helmet.

B66-10202
BODY-FITTED HARNESS PROVIDES SAFE AND EASY
COMPONENT HANDLING
MILLER, E. G. ROTHWELL, G. E. /IBM/ MAY 1966
M-FS-533

Body-fitted restraint harness enables workers to safely and conveniently handle critical components during their installation or removal. Since the harness supports the components, the worker is able to maneuver through restricted areas with his hands free. It is easily put on, adjusted, and removed, or comfortably worn without interfering with normal activities.

B66-10204
TORQUE WRENCH ALLOWS READINGS FROM
INACCESSIBLE LOCATIONS
DE BARNARDO, M. /N. AM. AVIATION/ MAY 1966
M-FS-598

Torque wrench with an adjustable drive shaft permits indicator to remain in view when used on sections of equipment with limited access. The shaft is capable of protruding from either side of the wrench head by means of spring loaded balls.

B66-10206
LOW POWER HEATING ELEMENT PROVIDES THERMAL
CONTROL DURING SWAGING OPERATIONS
CROWELL, J. W. /CHRYSLER CORP./ MAY 1966
M-FS-457

Low-power, cylindrical heating element in a swaging anvil assembly heats the material being worked on. The increased ductility of heated material results in crack-free deformation.

B66-10208
TOOL ENABLES PROPER MATING OF ACCELEROMETER
AND CABLE CONNECTOR
STEED, C. N. /N. AM. AVIATION/ MAY 1966
M-FS-611

Tool supports accelerometer in axial alignment with an accelerometer cable connector and permits tightening of the accelerometer to the cable connector with a torque wrench. This is done without damaging the components or permitting them to work loose under sustained, high-level vibrations.

B66-10209
SPECIAL TOOL SEALS CONDUCTORS WITH COMBINATION
OF PLASTIC SLEEVES
YOUNG, S. /N. AM. AVIATION/ MAY 1966
M-FS-579

Special tool seals electrical conductors connecting instrumentation within space vehicle cryogenic fuel tanks and oxidizer tanks. An inner sleeve of fluorinated ethylene-propylene and an outer sleeve of tetrafluoroethylene enclose a bundle of conductors and are heated with the tool to form a tight seal of the bundle and each individual wire.

B66-10210
ADJUSTABLE CUTTING GUIDE ALIGNS AND POSITIONS
STACKS OF MATERIAL
THIEL, A. M. MAY 1966
MSC-321

Adjustable guide tool aligns and positions stacks of material for cutting at various angles. The device adapts its shape to stacks of any corner angle, adjusts to any cutting angle, and quickly aligns the stacks for repeated cutting. With this device, an operator need not place his hands under the knife during alignment.

B66-10211
PRESSURE SEAL RING MAY BE EFFECTIVE OVER WIDE
TEMPERATURE RANGE
INNOVATOR NOT GIVEN /N. AM. AVIATION/ MAY 1966
M-FS-486

Positive pressure seal rings seal bolted flange joints in pressure vessels containing fluids whose temperatures can vary over a wide range. The seal rings mate with grooves in the flanges and

compensate for the excessive thermal expansion or contraction of a gasketed joint.

B66-10212

LIQUID TRAP SEALS THERMOCOUPLE LEADS

RUPPE, E. P. /N. AM. AVIATION/ MAY 1966

M-FS-688

Liquid trap seals thermocouple leads coming out of a brazing retort that operates with a controlled atmosphere so that air cannot enter the retort and hydrogen cannot escape. The trap is fastened to a duct welded to the retort. Thermocouple leads are led out through the duct and trap, with the fluid forming a gastight seal between the atmosphere and the retort.

B66-10213

CYLINDRICAL CLAW CLAMP HAS QUICK RELEASE

FEATURE

GOODWIN, G. D. /CHRYSLER CORP./ MAY 1966

M-FS-513

Claw clamp grasps cylindrical shapes by pressing its jaws around the object. The clamp is released by retraction of a release pin which extends beyond the clamp handle on both sides for better purchase.

B66-10214

COLLOIDAL SUSPENSION SIMULATES LINEAR

DYNAMIC PRESSURE PROFILE

MC CANN, R. J. /LOCKHEED MISSILES AND SPACE CO./

JUN. 1966

WOO-266

Missile nose fairings immersed in colloidal suspension prepared with various specific gravities simulate pressure profiles very similar to those encountered during reentry. Stress and deflection conditions similar to those expected during atmospheric reentry are thus attained in the laboratory.

B66-10215

ELECTRON BEAM WELDING OF COPPER-MONEL

FACILITATED BY CIRCULAR MAGNETIC SHIELDS

LAMB, J. N. /N. AM. AVIATION/ MAY 1966

M-FS-569

High permeability, soft magnetic rings are placed on both sides of electron beam weld seams in copper-Monel circular joint. This eliminates deflection of the electron beam caused by magnetic fields present in the weld area.

B66-10216

SOFT-SEAL VALVE HOLDS HAZARDOUS FLUIDS

SAFELY

MAY 1966 SEE ALSO NASA-TN-D-1727

LEWIS-275

Valve assembly allows transfer of hazardous or reactive fluids such as liquid fluorine without corrosion of valve face and seat material. The assembly consists of a plug to block bulk flow and a soft-seal outer seat to effect zero-leak stoppage.

B66-10217

FIBERGLASS CONTAINER SHELLS FORM

CONTAMINATION-FREE STORAGE UNITS

KRAUS, H. M. /N. AM. AVIATION/ JUN. 1966

WOO-275

Interchangeable molded fiberglass shells are locked together to form storage units of various depths. These units can hold components weighing 1500 pounds, are easily transportable, and protect contents from contamination.

B66-10218

PRESSURE VESSELS FABRICATED WITH HIGH-STRENGTH

WIRE AND ELECTROFORMED NICKEL

ROTH, B. /N. AM. AVIATION/ JUN. 1966

M-FS-580

Metal pressure vessels of various shapes having high strength-to-weight ratios are fabricated by using known techniques of filament winding and electroforming. This eliminates nonuniform wall thickness and unequal wall strength which resulted from welding formed vessel segments together.

B66-10219

TOOL PERMITS DAMAGE-FREE REMOVAL OF SOLAR CELL

BECKLEY, J. E., JR. /COMPREHENSIVE DESIGNERS/

MAY 1966

GSFC-467

Modified soldering iron extracts a wrap-around solar cell that is attached with solder or adhesive to a substrate without destroying the cell removed or damaging adjacent cells. Heat, vacuum, and compressed air, operated from a special head attached to the soldering iron, loosen, extract, and protect the cell.

B66-10226

A CONCEPTUAL DESIGN FOR SQUEEZE FILM BEARINGS

INNOVATOR NOT GIVEN /BENDIX CORP./ JUN. 1966

M-FS-573

Squeeze film bearings which require at least one of two adjacent surfaces to oscillate at high frequency and low amplitude have the oscillating /strain-producing/ member on a double gas film. This means of support allows dynamic changing of the gap between the bearing surfaces without the disadvantages produced when the oscillator is affixed to the bearing base itself.

B66-10228

STUDIES REVEAL EFFECTS OF PIPE BENDS ON FLUID

FLOW CAVITATION

STONEMETZ, R. E. MAY 1966

M-FS-516

Incipient cavitation in liquids flowing in pipes curved in one plane are affected by the pipe bend radii and pipe diameters, but little by pipe bend angles ranging from 60 to 120 degrees. Critical cavitation indices decrease with increasing Reynolds number and pressure ratio. Bulk liquid temperature increase lowers the mean critical velocity at which cavitation occurs.

B66-10229

EXPANDABLE RUBBER PLUG SEALS OPENINGS FOR

PRESSURE TESTING

MAY 1966

NU-0048

Plug assembly seals openings in piping systems, vessels, and chambers for low pressure leak testing. The assembly, which consists of a rubber sealing plug and the mechanism for expanding it into a pressure-tight configuration, adequately seals irregular diameters without damage to mating surfaces.

B66-10233

QUICK-CLOSING VALVE IS ACTUATED BY EXPLOSIVE

DISCHARGE

MAJESKI, S. J. JUN. 1966

ARC-55

Remotely controlled plug-type valve shuts off a high-pressure, high-temperature gas flow in a few milliseconds. The valve is actuated by a commercially available electrically initiated squib of low explosive power. More rapid closure is attainable with squibs containing heavier explosive charges.

B66-10235

KEY-LOCKED GUARD PREVENTS ACCIDENTAL SWITCH

ACTUATION

HAWTHORNE, K. C. /N. AM. AVIATION/ JUN. 1966

MSC-419

Switch guard, which locks in place on a panel, protects individual switches from accidental activation. The guard consists of a cup to cover the switch lever, a standard screw lock tumbler, and a stud that mates with a threaded adapter in the panel.

B66-10236

AUTOMATIC REEL CONTROLS FILLER WIRE IN

WELDING MACHINES

MILLETT, A. V. /N. AM. AVIATION/ JUN. 1966

MSC-416

Automatic reel on automatic welding equipment takes up slack in the reel-fed filler wire when welding operation is terminated. The reel maintains constant, adjustable tension on the wire during the welding operation and rewinds the wire from the wire feed unit when the welding is completed.

B66-10237
ADJUSTABLE KNIFE CUTS HONEYCOMB MATERIAL TO SPECIFIED DEPTH
 RAUSCHL, J. A. /N. AM. AVIATION/ JUN. 1966
 MSC-475

Calibrated, adjustable knife cuts aluminum honeycomb or other soft materials to a desired depth. The frame of the device accommodates standard commercial blades. Since the blade is always visible to the operator, the device can be used on any straight or irregular layout line.

B66-10238
INSERT SLEEVE PREVENTS TUBE SOLDERING CONTAMINATION
 STEIN, J. /N. AM. AVIATION/ JUN. 1966
 MSC-552

Teflon sleeve insert prevents contamination of internal tube surfaces by solder compound during soldering operations that connect and seal the tube ends. The sleeve insert is pressed into the mating tube ends with a slight interference fit.

B66-10239
HAND TOOL PERMITS SHRINK SIZING OF ASSEMBLED TUBING
 MILLETT, A. ODOR, M. JUN. 1966
 MSC-504

Portable tool sizes tubing ends without disassembling the tubing installation. The shrink sizing tool is clamped to the tubing and operated by a ratchet wrench. A gear train forces the tubing end against an appropriate die or mandrel to effect the sizing.

B66-10240
JIG PROTECTS TRANSISTORS FROM HEAT WHILE TINNING LEADS
 PELLETIER, A. J. WILLIS, G. A. /N. AM. AVIATION/ JUN. 1966
 MSC-515

In tinning transistor leads, an aluminum jig is used to dip the leads into the molten tin. The jig's mass shunts excess heat given off by the molten tin before it reaches and damages the transistor body.

B66-10241
BRAZING PROCESS USING AL-SI FILLER ALLOY RELIABLY BONDS ALUMINUM PARTS
 BEUYUKIAN, C. S. JOHNSON, W. R. /N. AM. AVIATION/ JUN. 1966
 MSC-448

Brazing process employs an aluminum-silicon filler alloy for diffusion bonding of aluminum parts in a vacuum or inert gas atmosphere. This process is carried out at temperatures substantially below those required in conventional process and produces bonds of greater strength and reliability.

B66-10242
PORTABLE SANDBLASTER CLEANS SMALL AREAS
 SEVERIN, H. J. /N. AM. AVIATION/ JUN. 1966
 MSC-523

Portable sandblasting unit rapidly and effectively cleans localized areas on a metal surface. The unit incorporates a bellows enclosure, masking plate, sand container, and used sand accumulator connected to a vacuum system. The bellows is equipped with an inspection window and light for observation of the sanding operation.

B66-10243
LATHE CHUCK KEY INCORPORATES SAFETY FEATURE
 CHRISTMAN, G. L. /N. AM. AVIATION/ JUN. 1966
 MSC-506

Lathe chuck key with spring loaded plunger cannot inadvertently be left in the chuck when the lathe is started. The plunger automatically ejects the key from the chuck when hand pressure is released.

B66-10244
HOLLOW NEEDLE USED TO CUT METAL HONEYCOMB STRUCTURES
 GREGG, E. A. /N. AM. AVIATION/ JUN. 1966
 MSC-486

Hollow needle tool cuts metal honeycomb structures without damaging adjacent material. The hollow

needle combines an electrostatic discharge and a stream of oxygen at a common point to effect rapid, accurate metal cutting. The tool design can be varied to use the hollow needle principle for cutting a variety of shapes.

B66-10246
MODIFIED SOLDERING IRON SPEEDS CUTTING OF SYNTHETIC MATERIALS
 SCHAFER, W. G., JR. /N. AM. AVIATION/ JUN. 1966
 M-FS-725

Modified soldering iron cuts large lots of synthetic materials economically without leaving frayed or jagged edges. The soldering iron is modified by machining an axial slot in its heating element tip and mounting a cutting disk in it. An alternate design has an axially threaded bore in the tip to permit the use of various shapes of cutting blades.

B66-10247
PRESSURE-WELDED FLANGE ASSEMBLY PROVIDES LEAKTIGHT SEAL AT REDUCED BOLT LOADS
 MARTENSON, A. J. /GE/ JUN. 1966
 M-FS-640

Vibration resistant flange-connector assembly provides a leaktight seal under reduced bolt loads. The assembly consists of ductile metal plates that are pressure welded between dies mounted in recessed flanges.

B66-10248
ELECTRICAL UPSETTING OF METAL SHEET FORMS WELD EDGE
 SCHERBA, E. S. /N. AM. AVIATION/ JUN. 1966
 M-FS-720

Electric gathering of sheet stock edges forms metal sheets in the shape of gore sections with heavier edge areas that can be welded without loss of strength. The edges are gathered by progressive resistance heating and upsetting, and are formed automatically. This process avoids disturbance of the metal's internal structure.

B66-10249
FLUID DAMPING REDUCES BELLOWS SEAL FATIGUE FAILURES
 INNOVATOR NOT GIVEN /N. AM. AVIATION/ JUN. 1966
 M-FS-565

Service life of a bellows-type seal in the presence of mechanical vibration is increased by a system of interconnected bellows with intervening cavities filled with a fluid which damps the amplitude of periodic deflection of the sealing bellows. Different damping fluids are used according to environmental conditions.

B66-10250
DIFFUSION BONDING MAKES STRONG SEAL AT FLANGED CONNECTOR
 GITZENDANNER, L. G. LANIEWSKI, J. P. RATHBUN, F. O., JR. /GE/ JUN. 1966
 M-FS-637

Copper strip seals a high pressure fluid system connector so that it is insensitive to relaxation of the bolt loads. The copper strip is diffusion bonded to the surfaces of the connector flange by application of high pressure and temperature.

B66-10253
TOOL SEPARATES SLEEVE-TYPE UNIONS WITHOUT HEAT
 MILLETT, A. U. /N. AM. AVIATION/ JUN. 1966
 MSC-497

Tool that uses conventional milling and cutting techniques separates sleeve type tubing unions and tubes without using heat. A selection of holders, associated bits, and cutting wheels permits preparation of varied diameter unions.

B66-10254
MILL PROFILER MACHINES SOFT MATERIALS ACCURATELY
 RAUSCHL, J. A. /N. AM. AVIATION/ JUN. 1966
 M-FS-692

Mill profiler machines bevels, slots, and grooves in soft materials, such as styrofoam phenolic-filled cores, to any desired thickness. A single operator can accurately control cutting depths in contour or straight line work.

05 MECHANICAL

B66-10255

FLOW RING VALVE IS SIMPLE, QUICK-ACTING
LINDFORS, J. A. /N. AM. AVIATION/ JUN. 1966
M-FS-752

Two porting rings, one within the other, control gas or liquid flow by using seal buttons as the sliding valve closers. Multiporting within the ring allows close control of the flow by the slight rotation of the outer porting ring.

B66-10258

CRITICAL PARTS ARE STORED AND SHIPPED IN ENVIRONMENTALLY CONTROLLED REUSABLE CONTAINER
KUMMERFELD, K. R. /N. AM. AVIATION/ JUN. 1966
M-FS-703

Environmentally controlled, hermetically sealed, reusable metal cabinet with storage drawers is used to ship and store sensitive electronic, pneumatic, or hydraulic parts or medical supplies under extreme weather or handling conditions. This container is compatible with on-site and transportation handling facilities.

B66-10262

ALUMINUM/STEEL WIRE COMPOSITE PLATES EXHIBIT HIGH TENSILE STRENGTH
INNOVATOR NOT GIVEN /HARVEY ALUMINUM CO./ JUN. 1966
M-FS-401

Composite plate of fine steel wires imbedded in an aluminum alloy matrix results in a lightweight material with high tensile strength. Plates have been prepared having the strength of titanium with only 85 percent of its density.

B66-10265

COMPACT ACTUATOR CONVERTS ROTARY TO LINEAR MOTION
FORD, A. G. JUN. 1966
JPL-786

Compact motor mounted on a stationary base converts rotary to linear motion. The motor rotates a gear train assembly so that the end of an arm attached to the assembly moves in a linear path.

B66-10266

SEAL SURFACES PROTECTED DURING ASSEMBLY
RICHARDSON, G. L. /AEROJET-GEN. CORP./ JUN. 1966
NU-0067

Protection device for sealed surfaces is placed over the polished surface entrance of trapped bosses and removed when the seal fitting has been engaged with the boss threads. This technique applies to various seal types used in close fitting, spring-loaded, threaded fittings.

B66-10267

RADIAL COOLANT CHANNELS FABRICATED BY SIMPLIFIED METHOD
FREEMAN, A. /AEROJET-GEN. CORP./ JUN. 1966
NU-0070

Radial coolant channels for distributing a coolant over the inner wall of a circular section are fabricated by cold-rolling indentations on the inside circumference of the base section and covering the indentations with a rolled flange.

B66-10269

DIFFERENTIAL EXPANSION PROVIDES PRESSURE FOR DIFFUSION BONDING OF LARGE DIAMETER RINGS
INNOVATOR NOT GIVEN /BOEING CO./ JUN. 1966 2 P
M-FS-588

External pressure band is used to bond aluminum alloy collars to large diameter, stainless steel rings. The band contracts while cooling and exerts pressure on the joint between the silver-plated surfaces of the ring and collar which expand toward the band. This diffusion bonding by differential expansion minimizes aluminum deformation.

B66-10275

FASTENER PROVIDES FOR BOLT MISALIGNMENT AND QUICK RELEASE OF FLANGE
ENGLAND, C. /AEROJET-GEN. CORP./ JUN. 1966
NU-0074

Fastener enables two large flanges to be bolted together without close alignment between the bolt

and bolt-hole diameters, and provides for a quick release of one of the flanges under emergency conditions. It contains a nut that is retained by a square head in a recess in one side of the removable flange and by a collar and snap ring on the other side of the flange.

B66-10276

REMOTELY CONTROLLED SYSTEM COUPLES AND DECOUPLES LARGE DIAMETER PIPES
GRIFFIN, P. A. /AEROJET-GEN. CORP./ JUN. 1966
NU-0062

Remote control, air-motor driven, chain-drive system engages and disengages a flange coupling from large-diameter, high pressure fluid lines.

B66-10277

DEVICE FACILITATES CENTERING OF WORKPIECES IN LATHE CHUCK
PRATER, L. /N. AM. AVIATION/ JUN. 1966
M-FS-685

Spring-loaded device used in conjunction with a standard dial indicator facilitates centering a workpiece in an independent four-jaw lathe chuck.

B66-10278

O-RINGS WITH MYLAR BACK-UP PROVIDE HIGH-PRESSURE CRYOGENIC SEAL
FUNK, G. M. /N. AM. AVIATION/ JUN. 1966
M-FS-603

Mylar lip type back-up ring installed in combination with three rubber O-rings seal the junctions between a tube stub and an adapter during high pressure gas flow at cryogenic to room temperatures. Mylar seals should not be used with oxygen under pressure or in the liquid state.

B66-10279

MAGNETIC LATCHES PROVIDE POSITIVE OVERPRESSURE CONTROL
LOY, J. L. /WESTINGHOUSE ASTRONUCL. LAB./ JUN. 1966
NU-0057

Louvers are used for overpressure safety venting in rooms or chambers where explosion hazards exist. The louvers have individually hinged closures that are held in locked position by commercially available magnets that quickly release them in an overpressure condition.

B66-10283

FIXED VACUUM PLATE CLAMPS STYROFOAM FOR MACHINING
RAUSCHL, J. A. /N. AM. AVIATION/ JUN. 1966
M-FS-683 M-FS-726

Aluminum plate holds styrofoam securely in place for machining operations. The styrofoam is clamped to rubber or cork pads on the plate surface by vacuum. Foam rubber tape provides the vacuum seal.

B66-10284

EXTENSOMETER AUTOMATICALLY MEASURES ELONGATION IN ELASTOMERS
HOOPER, C. D. JUN. 1966
M-FS-517

Extensometer, with a calibrated shaft, measures the elongation of elastomers and automatically records this distance on a chart. It is adaptable to almost any tensile testing machine and is fabricated at a relatively low cost.

B66-10285

HIGH PRESSURE TUBE COUPLING REQUIRES NO THREADS OR FLARES
STEIN, J. A. /N. AM. AVIATION/ JUN. 1966
MSC-600

High pressure tube coupling connects to any straight, unthreaded, and unflared tubing end without deforming or damaging the tubing. The coupling grips the tube wall tightly between an external compression sleeve and an internal hollow mandrel. It is adaptable to standard screw fittings for test stand attachment.

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Subject Index

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Portable sandblaster cleans small areas
MSC-523 B66-10242 05

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CHAR

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Magnetically operated limit switch has
improved reliability, minimizes arcing
MSC-422 B66-10270 01

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High-pressure, low temperature electrical
connector makes no-leak seal
MSC-276 B66-10079 02

Mounting improves heat-sink contact with
beryllia washer
MSC-194 B66-10144 01

Polarizing keys prevent mismatch of connector
plugs and receptacles
MSC-443 B66-10251 01

ELECTRIC INSULATION
Mounting improves heat-sink contact with
beryllia washer
MSC-194 B66-10144 01

ELECTRIC MOTOR
Electropneumatic transducer automatically
limits motor current
LEWIS-253 B66-10160 01

ELECTROCARDIOGRAPHY
Integral skin electrode for
electrocardiography is expendable
MSC-299 B66-10118 04

ELECTRODE
Reaction heat used in static water removal
from fuel cells
M-FS-532 B66-10013 01

Improved electrode paste provides reliable
measurement of galvanic skin response
MSC-146 B66-10049 04

Gelatin coated electrodes allow prolonged
bioelectronic measurements
MSC-153 B66-10088 01

Integral skin electrode for
electrocardiography is expendable
MSC-299 B66-10118 04

ELECTROFORMING
Pressure vessels fabricated with high-strength
wire and electroformed nickel
M-FS-580 B66-10218 05

ELECTROLYTE
Gelatin coated electrodes allow prolonged
bioelectronic measurements
MSC-153 B66-10088 01

New energy storage concept uses tapes
LEWIS-239 B66-10098 02

ELECTROMECHANICAL DEVICE
Circuit operates as sine function generator
MSC-255 B66-10038 01

Electropneumatic transducer automatically
limits motor current
LEWIS-253 B66-10160 01

ELECTROMECHANICS
Variable-capacitance tachometer eliminates
troublesome magnetic fields
GSFC-435 B66-10126 01

ELECTRON BEAM
Electron beam seals outer surfaces of porous
bodies
M-FS-562 B66-10033 03

ELECTRON BEAM WELDING
Split glass tube assures quality in electron
beam brazing
M-FS-564 B66-10151 05

Electron beam welding of copper-MONEL
facilitated by circular magnetic shields
M-FS-569 B66-10215 05

ELECTRON PROBE
Standards for electron probe microanalysis of
silicates prepared by convenient method
GSFC-469 B66-10234 03

ELECTRONIC EQUIPMENT
Floating device aligns blind connections
MSC-256 B66-10007 05

Compact retractor protects cabling loops
M-FS-561 B66-10018 05

Circuit operates as sine function generator
MSC-255 B66-10038 01

Capacitive system detects and locates fluid
leaks
M-FS-478 B66-10099 01

Soldering tool heats workpieces and applies
solder in one operation
LEWIS-247 B66-10115 05

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FILAMENT WINDING

Fixture aids soldering of electronic components on circuit board
ARC-56 B66-10162 01

EMITTER
Vapor grown silicon dioxide improves transistor base-collector junctions
GSFC-389 B66-10091 01

ENERGY STORAGE DEVICE
New energy storage concept uses tapes
LEWIS-239 B66-10098 02

ENGINE CONTROL
Fingertip current control facilitates use of arc welding gun
MSC-289 B66-10092 05

ENGINE COOLANT
Radial coolant channels fabricated by simplified method
NU-0070 B66-10267 05

ENGINE PART
Ring counter circuit switches multiphase motor direction of rotation
JPL-SC-166 B66-10101 01

ENVIRONMENTAL CHAMBER
Materials physically tested in variable-environment chamber
JPL-789 B66-10130 01

ENVIRONMENTAL CONTROL
Self-contained clothing system provides protection against hazardous environments
M-FS-536 B66-10201 05

Critical parts are stored and shipped in environmentally controlled reusable container
M-FS-703 B66-10258 05

ENZYME
Microorganisms detected by enzyme-catalyzed reaction
JPL-782 B66-10117 04

EPOXY RESIN
Epoxy blanket protects milled part during explosive forming
M-FS-307 B66-10029 03

Compound improves thermal interface between thermocouple and sensed surface
NU-0028 B66-10121 02

Epoxy-coated containers easily opened by wire band
M-FS-592 B66-10174 05

Improved adhesive for cryogenic applications cures at room temperature
WOO-132 B66-10185 03

ERROR CORRECTING DEVICE
Simplified circuit corrects faults in parallel binary information channels
JPL-SC-090 B66-10261 01

ERROR DETECTING CODE
Detection system ensures positive alarm activation in digital message loss
WOO-208 B66-10287 01

ETCHING
Etching process mills PH 14-8 Mo alloy steel to precise tolerances
MSC-270 B66-10110 03

EXCITATION
Electrodeless discharge lamp is easily started, has high stability
WOO-030 B66-10015 01

EXPLOSION
Magnetic latches provide positive overpressure control
NU-0057 B66-10279 05

EXPLOSIVE FORMING
Explosive force of Primacord grid forms large sheet metal parts
M-FS-316 B66-10014 05

Epoxy blanket protects milled part during explosive forming
M-FS-307 B66-10029 03

EXTENSOMETER
Extensometer automatically measures elongation in elastomers
M-FS-517 B66-10284 05

EXTRACTION
Tool permits damage-free removal of solar cell
GSFC-467 B66-10219 05

EYE
Optical projectors simulate human eyes to establish operator's field of view
WOO-250 B66-10010 02

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FASTENER
Epoxy-coated containers easily opened by wire band
M-FS-592 B66-10174 05

Fastener provides for bolt misalignment and quick release of flange
NU-0074 B66-10275 05

FATIGUE
Plugged hollow shaft makes fatigue-resistant shear pin
LANGLEY-195 B66-10077 05

FATIGUE LIFE
Fluid damping reduces bellows seal fatigue failures
M-FS-565 B66-10249 05

FATIGUE TEST
Cryostat modified to aid rotating beam fatigue test
M-FS-435 B66-10083 03

Fatigue cracks detected and measured without test interruption
LEWIS-266 B66-10178 02

FATIGUE TESTING MACHINE
Fatigue tester achieves true axial motion through flex plates and bars
NU-0021 B66-10164 01

FEEDING DEVICE
Modified power tool rapidly drives series torque bolts
MSC-221 B66-10054 05

FERROELECTRICS
Ferroelectric bolometer measures RF absolute power at submillimeter wavelengths
GSFC-422 B66-10051 01

FIBER
Fibers of newly developed refractory ceramics produced by improved process
WOO-169 B66-10196 03

FIELD EFFECT TRANSISTOR /FET/
FET comparator detects analog signal levels without loading analog device
M-FS-503 B66-10224 01

FILAMENT
Lamp automatically switches to new filament on burnout
M-FS-498 B66-10046 01

FILAMENT WINDING
Pressure vessels fabricated with high-strength wire and electroformed nickel
M-FS-580 B66-10218 05

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FILLER

Aluminum oxide filler prevents obstructions
in tubing during welding
MSC-222 B66-10125 05

Brazing process using Al-Si filler alloy
reliably bonds aluminum parts
MSC-448 B66-10241 05

FILM

Single-crystal semiconductor films grown on
foreign substrates
WOO-076 B66-10225 01

FILM THICKNESS

White primer permits a corrosion-resistant
coating of minimum weight
M-FS-304 B66-10207 03

FILTER

Process reduces pore diameters to produce
superior filters
WOO-093 B66-10037 03

Inexpensive infrared source improvised from
flashlight
M-FS-494 B66-10096 02

FIRST AID

Buoyant Stokes litter assembly used for sea
rescue operations
MSC-131 B66-10019 05

FITTING

O-ring tube fittings form leakproof seal in
hydraulic systems
M-FS-481 B66-10020 05

Seal surfaces protected during assembly
NU-0067 B66-10266 05

FLAME HOLDER

Mounting facilitates removal and installation
of flame-detector rods
M-FS-555 B66-10150 05

FLANGE

Pressure seal ring may be effective over wide
temperature range
M-FS-486 B66-10211 05

Pressure-welded flange assembly provides
leaktight seal at reduced bolt loads
M-FS-640 B66-10247 05

Radial coolant channels fabricated by
simplified method
NU-0070 B66-10267 05

Fastener provides for bolt misalignment and
quick release of flange
NU-0074 B66-10275 05

Remotely controlled system couples and
decouples large diameter pipes
NU-0062 B66-10276 05

FLARED BODY

Forming tool improves quality of tubing flares
WOO-231 B66-10001 05

FLAW DETECTION

Portable self-powered device detects internal
flaws in tubular structures
NU-0019 B66-10028 01

Fatigue cracks detected and measured without
test interruption
LEWIS-266 B66-10178 02

FLEXIBILITY

Flexible protective coatings made from
silicon-nitrogen materials
M-FS-528 B66-10027 03

FLIGHT ALTITUDE

Sextant measures spacecraft altitude without
gravitational reference
MSC-200 B66-10143 02

FLOW GRAPH

Fortran program flowchart is automatically
produced
M-FS-369 B66-10062 01

FLOW MEASUREMENT

Wide-range instrument monitors flow rates
of chemically active fluids
MSC-186 B66-10205 01

FLOW METER

Flowmeter measures low gas-flow rates
M-FS-215 B66-10036 01

Segmented ball valve is easy to open and close
WOO-248 B66-10195 05

FLOW REGULATOR

High-pressure, low temperature electrical
connector makes no-leak seal
MSC-276 B66-10079 02

System proportions fluid-flow in response
to demand signals
GSFC-457 B66-10094 01

FLUID

Wide-range instrument monitors flow rates
of chemically active fluids
MSC-186 B66-10205 01

FLUID AMPLIFIER

Queuing register uses fluid logic elements
M-FS-317 B66-10100 05

Binary fluid amplifier solves stability and
load problems
ERC-15 B66-10177 01

FLUID TRANSMISSION LINE

Radioactive tracer system detects oil
contaminants in fluid lines
M-FS-512 B66-10090 03

Remotely controlled system couples and
decouples large diameter pipes
NU-0062 B66-10276 05

FLUORESCENT EMISSION

Sensor detects hydrocarbon oil contaminants
in fluid lines
M-FS-522 B66-10068 01

FLUORINE

Soft-seal valve holds hazardous fluids
safely
LEWIS-275 B66-10216 05

FOAMED MATERIAL

Mill profiler machines soft materials
accurately
M-FS-692 B66-10254 05

Improved thermal insulation materials made of
foamed refractory oxides
M-FS-735 B66-10288 03

FORCE

Transducer measures force in vacuum
environment
LEWIS-218 B66-10161 01

FORMING

Rotating mandrel speeds assembly of plastic
inflatables
LANGLEY-155 B66-10137 05

FORTAN

Fortran program flowchart is automatically
produced
M-FS-369 B66-10062 01

FREON

Freon provides heat transfer for solid CO₂
calibration standard
M-FS-644 B66-10257 02

FRICTION

Friction device damps linear motion of

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GRAPHITE

rotating shaft
W00-214 B66-10030 05

FUEL CELL
Resilient clamp holds fuel cell stack through thermal cycle
MSC-313 B66-10035 05
Vapor diffusion electrode improves fuel cell operation
LEWIS-187 B66-10281 03

FUEL TANK
Automatic fluid separator supplies own driving power
W00-085 B66-10008 02

FURNACE
Hydrogen-atmosphere induction furnace has increased temperature range
LEWIS-153 B66-10055 05
Auxiliary coil controls temperature of RF induction heater
GSFC-428 B66-10067 01
High-speed furnace uses infrared radiation for controlled brazing
NU-0047 B66-10268 02

FUSE
Single connector provides safety fuses for multiple lines
MSC-199 B66-10050 01

G

GALLIUM ALLOY
Gallium alloy films investigated for use as boundary lubricants
LEWIS-245 B66-10165 03

GALLIUM ARSENIDE
Cuprous selenide and sulfide form improved photovoltaic barriers
W00-212 B66-10025 01

GAMMA RADIATION
Mount makes liquid nitrogen-cooled gamma ray detector portable
LEWIS-259 B66-10103 01

GAS ANALYZER
Subminiaturized gas chromatograph gives fast, efficient analysis
JPL-735 B66-10182 01

GAS BEARING
A conceptual design for squeeze film bearings
M-FS-573 B66-10226 05

GAS CHROMATOGRAPHY
Hot-wire detector for chemically active materials used in gas chromatography
MSC-269 B66-10139 03
Subminiaturized gas chromatograph gives fast, efficient analysis
JPL-735 B66-10182 01

GAS DISCHARGE
Electrodeless discharge lamp is easily started, has high stability
W00-030 B66-10015 01

GAS FLOW
Flowmeter measures low gas-flow rates
M-FS-215 B66-10036 01
High temperature thermocouple operates in reduction atmosphere
NU-0046 B66-10134 01
Dual regulator controls two gases from a single reference
MSC-227 B66-10167 05
Flow ring valve is simple, quick-acting
M-FS-752 B66-10255 05

GAS HEATING
Process reduces pore diameters to produce superior filters
W00-093 B66-10037 03

GAS PRESSURE
Rod and dish cathode improves Penning-type vacuum gauge
GSFC-447 B66-10082 01
Solid-film lubricant is effective at high temperatures in vacuum
LEWIS-228 B66-10087 03

GAS TUBE
Simple device facilitates inert-gas welding of tubes
M-FS-558 B66-10155 05

GAS VALVE
Quick-closing valve is actuated by explosive discharge
ARC-55 B66-10233 05

GAS WELDING
Simple device facilitates inert-gas welding of tubes
M-FS-558 B66-10155 05

GASKET
Pressure seal ring may be effective over wide temperature range
M-FS-486 B66-10211 05

GAUGE
Polymer deformation gauge measures thickness change in tensile tests
JPL-745 B66-10147 01
Thin-film gage measures low heat-transfer rates
LANGLEY 205 B66-10180 01

GEAR
Run-in with chemical additive protects gear surface
M-FS-548 B66-10069 05

GELATIN
Gelatin coated electrodes allow prolonged bioelectronic measurements
MSC-153 B66-10088 01

GENERATOR
Pressure transducers dynamically tested with sinusoidal pressure generator
LEWIS-268 B66-10031 01
Circuit operates as sine function generator
MSC-255 B66-10038 01

GLASS
Split glass tube assures quality in electron beam brazing
M-FS-564 B66-10151 05
Fibers of newly developed refractory ceramics produced by improved process
W00-169 B66-10196 03

GLASS FIBER
Aluminized fiber glass insulation conforms to curved surfaces
M-FS-477 B66-10024 03
Fiberglass container shells form contamination-free storage units
W00-275 B66-10217 05

GRAPHIC ARTS
Offset lenses add versatility to phototypesetting machine
HQ-9 B66-10173 02

GRAPHITE
Refractory coating protects intricate graphite elements from high-temperature hydrogen
NU-0027 B66-10084 01

GRINDING MACHINE

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GRINDING MACHINE

Multisurface fixture permits easy grinding
of tool bit angles
M-FS-586 B66-10171 05

GROOVE

Bench vise adapter grips tubing securely and
safely
MSC-279 B66-10056 05

GUN

Shoulder adapter steadies spot welding gun
M-FS-321 B66-10076 05

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HAFNIUM OXIDE

Protective coating withstands high temperature
in oxidizing atmosphere
M-FS-529 B66-10044 03

HANDLING EQUIPMENT

Dispenser leak-tests and sterilizes rubber
gloves
MSC-285 B66-10166 03

Body-fitted harness provides safe and easy
component handling
M-FS-533 B66-10202 05

HEART RATE

Phonocardiograph system monitors heart sounds
MSC-185 B66-10154 04

HEAT

Reaction heat used in static water removal
from fuel cells
M-FS-532 B66-10013 01

HEAT EFFECT

Storage-stable foamable polyurethane is
activated by heat
LANGLEY-187 B66-10111 03

HEAT REGULATION

Solid state thermostat has integral probe and
circuitry
M-FS-434 B66-10193 01

HEAT SINK

Copper foil provides uniform heat sink path
MSC-262 B66-10004 02

Mounting improves heat-sink contact with
beryllia washer
MSC-194 B66-10144 01

Jig protects transistors from heat while
tinning leads
MSC-515 B66-10240 05

Rugged microelectronic module package supports
circuitry on heat sink
MSC-81A B66-10245 01

HEAT SOURCE

High-speed furnace uses infrared radiation
for controlled brazing
NU-0047 B66-10268 02

HEAT TRANSFER

Mounting improves heat-sink contact with
beryllia washer
MSC-194 B66-10144 01

Thin-film gage measures low heat-transfer
rates
LANGLEY 205 B66-10180 01

Freon provides heat transfer for solid CO₂
calibration standard
M-FS-644 B66-10257 02

Boron-deoxidized copper withstands brazing
temperatures
M-FS-762 B66-10273 03

HEATER

Refractory coating protects intricate graphite

elements from high-temperature hydrogen
NU-0027 B66-10084 01

Apparatus measures thermal conductivity of
honeycomb-core panels
LANGLEY-202 B66-10127 01

HEATING

Heated die facilitates tungsten forming
LEWIS-25A B66-10047 05

HEATING EQUIPMENT

Low power heating element provides thermal
control during swaging operations
M-FS-457 B66-10206 05

HERMETIC SEAL

Critical parts are stored and shipped in
environmentally controlled reusable container
M-FS-703 B66-10258 05

HIGH ENERGY ELECTRON

Radiation used to temperature compensate
semiconductor strain gages
LANGLEY-207 B66-10186 02

HIGH EXPLOSIVE

Explosive force of Primacord grid forms large
sheet metal parts
M-FS-316 B66-10014 05

HIGH TEMPERATURE ALLOY

Nickel-base superalloys developed for high-
temperature applications
LEWIS-226 B66-10222 03

HIGH TEMPERATURE ENVIRONMENT

Refractory coating protects intricate graphite
elements from high-temperature hydrogen
NU-0027 B66-10084 01

High temperature thermocouple operates
in reduction atmosphere
NU-0046 B66-10134 01

Gallium alloy films investigated for use
as boundary lubricants
LEWIS-245 B66-10165 03

HIGH TEMPERATURE LUBRICANT

Solid-film lubricant is effective at high
temperatures in vacuum
LEWIS-228 B66-10087 03

HIGH TEMPERATURE MATERIAL

Silazane polymers show promise for high-
temperature application
M-FS-466 B66-10194 03

HIGH VACUUM

Polytetrafluoroethylene lubricates ball
bearings in vacuum environment
M-FS-379 B66-10081 03

Rod and dish cathode improves Penning-type
vacuum gauge
GSFC-447 B66-10082 01

Solid-film lubricant is effective at high
temperatures in vacuum
LEWIS-228 B66-10087 03

HOLDER

Specimen holder design improves accuracy
of X-ray powder analysis
JPL-SC-165 B66-10075 02

Multisurface fixture permits easy grinding
of tool bit angles
M-FS-586 B66-10171 05

Tool post modification allows easy turret
lathe cutting-tool alignment
M-FS-581 B66-10191 05

Fixed vacuum plate clamps styrofoam for
machining
M-FS-683 B66-10283 05

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IODIDE

HONEYCOMB

Adjustable knife cuts honeycomb material to specified depth
MSC-475 B66-10237 05

Hollow needle used to cut metal honeycomb structures
MSC-486 B66-10244 05

HONEYCOMB CORE

Apparatus measures thermal conductivity of honeycomb-core panels
LANGLEY-202 B66-10127 01

Insulation for cryogenic tanks has reduced thickness and weight
M-FS-326 B66-10183 02

HORIZON SENSING

Sextant measures spacecraft altitude without gravitational reference
MSC-200 B66-10143 02

HOT WIRE

Hot-wire detector for chemically active materials used in gas chromatography
MSC-269 B66-10139 03

HUMAN FACTOR

Body-fitted harness provides safe and easy component handling
M-FS-533 B66-10202 05

HYDRAULIC SYSTEM

O-ring tube fittings form leakproof seal in hydraulic systems
M-FS-481 B66-10020 05

HYDROCARBON

Vapor condensation process produces slurry of magnesium particles in liquid hydrocarbons
LEWIS-263 B66-10104 03

HYDROGEN

Process reduces pore diameters to produce superior filters
WOO-093 B66-10037 03

Hydrogen-atmosphere induction furnace has increased temperature range
LEWIS-153 B66-10055 05

Refractory coating protects intricate graphite elements from high-temperature hydrogen
NU-0027 B66-10084 01

Oxygen-hydrogen torch is a small-scale steam generator
NU-0042 B66-10120 03

HYDROX FUEL CELL

Reaction heat used in static water removal from fuel cells
M-FS-532 B66-10013 01

ILLUMINATION

Circular, explosion-proof lamp provides uniform illumination
MSC-382 B66-10156 02

IMAGE CONVERTER

New television camera eliminates vidicon tube
M-FS-472 B66-10112 01

IMAGING TECHNIQUE

Optical device enables small detector to see large field of view
WOO-253 B66-10263 02

INDICATOR

Depth indicator and stop aid machining to precise tolerances
M-FS-553 B66-10149 05

Torque wrench allows readings from inaccessible locations
M-FS-598 B66-10204 05

Device facilitates centering of workpieces in lathe chuck
M-FS-685 B66-10277 05

INDUCTION HEATING EQUIPMENT

Hydrogen-atmosphere induction furnace has increased temperature range
LEWIS-153 B66-10055 05

Auxiliary coil controls temperature of RF induction heater
GSFC-428 B66-10067 01

INFLATABLE DEVICE

Buoyant Stokes litter assembly used for sea rescue operations
MSC-131 B66-10019 05

Self-inflating lifevest stores in small package
MSC-5A B66-10184 04

INFLATABLE STRUCTURE

Rotating mandrel speeds assembly of plastic inflatables
LANGLEY-155 B66-10137 05

INFRARED FILTER

PTFE-ALUMINUM films serve as neutral density filters
LANGLEY-189 B66-10017 02

INFRARED RADIATION

Inexpensive infrared source improvised from flashlight
M-FS-494 B66-10096 02

High-speed furnace uses infrared radiation for controlled brazing
NU-0047 B66-10268 02

INPUT

Automatic gain control circuit handles wide input range
MSC-166 B66-10089 01

Electropneumatic transducer automatically limits motor current
LEWIS-253 B66-10160 01

Offset lenses add versatility to phototypesetting machine
HQ-9 B66-10173 02

INSERT

Expandable insert serves as screw anchor
MSC-301 B66-10132 05

Insert sleeve prevents tube soldering contamination
MSC-552 B66-10238 05

INSPECTION

Ultrasonic recording scanner used for nondestructive weld inspection
M-FS-284 B66-10220 01

INSULATION

Nylon bit removes cork insulation without damage to substrate
MSC-381 B66-10152 05

Control system maintains compartment at constant temperature
JPL-SC-145 B66-10188 05

INSULATOR

Reflective insulator layers separated by bonded silica beads
MSC-215 B66-10070 03

INTEGRATED CIRCUIT

Diffusion technique stabilizes resistor values
MSC-205 B66-10142 01

IODIDE

Cuprous selenide and sulfide form improved photovoltaic barriers

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K			LIGHT EMISSION Inexpensive infrared source improvised from flashlight M-FS-494	B66-10096	02
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M-FS-516	B66-10228	05	Queueing register uses fluid logic elements	B66-10100	05
Flow ring valve is simple, quick-acting			M-FS-317		
M-FS-752	B66-10255	05	Exclusive-or logic circuit has useful properties	B66-10272	01
Vacuum test fixture improves leakage rate measurements			LANGLEY-214		
MSC-271	B66-10286	01	LUBRICANT		
LIQUID GAS			Gallium alloy films investigated for use as boundary lubricants	B66-10165	03
Complementary system vaporizes subcooled liquid, improves transformer efficiency			LEWIS-245		
M-FS-550	B66-10045	02	Dry film lubricant is effective at extreme loads	B66-10256	03
LIQUID HYDROGEN			M-FS-628		
Control system maintains selected liquid level			LUBRICATING OIL		
M-FS-470	B66-10039	01	Radioactive tracer system detects oil contaminants in fluid lines	B66-10090	03
Coating permits use of strain gage in water and liquid hydrogen			M-FS-512		
M-FS-594	B66-10192	01	M		
LIQUID LEVEL			MACHINE TOOL		
Control system maintains selected liquid level			T-handle wrench has torque-limiting action	B66-10065	05
M-FS-470	B66-10039	01	MSC-280		
Charged probes, bourdon tubes maintain cryogenic liquid level			Threaded pilot insures cutting tool alignment	B66-10074	05
LEWIS-261	B66-10109	01	M-FS-527		
Device without electrical connections in tank measures liquid level			Pipe cutting tool is useful in limited space	B66-10102	05
WOO-235	B66-10198	01	MSC-36		
LIQUID NITROGEN			Portable power tool machines weld joints in field	B66-10145	05
Mount makes liquid nitrogen-cooled gamma ray detector portable			M-FS-258		
LEWIS-259	B66-10103	01	Depth indicator and stop aid machining to precise tolerances	B66-10149	05
Charged probes, bourdon tubes maintain cryogenic liquid level			M-FS-553		
LEWIS-261	B66-10109	01	Nylon bit removes cork insulation without damage to substrate	B66-10152	05
LIQUID OXYGEN /LOX/			MSC-381		
Surfactant for dye-penetrant inspection is insensitive to liquid oxygen			Multisurface fixture permits easy grinding of tool bit angles	B66-10171	05
M-FS-475	B66-10131	03	M-FS-586		
LIQUID SODIUM			Tool post modification allows easy turret lathe cutting-tool alignment	B66-10191	05
Fluoride coatings make effective lubricants in molten sodium environment			M-FS-581		
LEWIS-229	B66-10005	03	Adjustable cutting guide aligns and positions stacks of material	B66-10210	05
LOAD FACTOR			MSC-321		
Mechanism isolates load weighing cell during lifting of load			Lathe chuck key incorporates safety feature		
MSC-297	B66-10071	05			
Plugged hollow shaft makes fatigue-resistant shear pin					
LANGLEY-195	B66-10077	05			

MACHINING

SUBJECT INDEX

MSC-506 B66-10243 05

MACHINING
 Calibrated clamp facilitates pressure application
 MSC-298 B66-10059 05

Modified soldering iron speeds cutting of synthetic materials
 M-FS-725 B66-10246 05

Mill profiler machines soft materials accurately
 M-FS-692 B66-10254 05

Fixed vacuum plate clamps styrofoam for machining
 M-FS-683 B66-10283 05

MAGNESIUM
 Vapor condensation process produces slurry of magnesium particles in liquid hydrocarbons
 LEWIS-263 B66-10104 03

MAGNETIC CIRCUIT
 Magnetically operated limit switch has improved reliability, minimizes arcing
 MSC-422 B66-10270 01

MAGNETIC COIL
 Calculations enable optimum design of magnetic brake
 LEWIS-251 B66-10073 05

MAGNETIC EFFECT
 Variable-capacitance tachometer eliminates troublesome magnetic fields
 GSFC-435 B66-10126 01

MAGNETIC FIELD INTENSITY
 Niobium thin films are superconductive in strong magnetic fields at low temperatures
 JPL-SC-174 B66-10122 02

MAGNETIC SHIELDING
 Electron beam welding of copper-MONEL facilitated by circular magnetic shields
 M-FS-569 B66-10215 05

MAGNETOMETER
 Thermal motor positions magnetometer sensors
 ARC-51 B66-10078 05

MANDREL
 Rotating mandrel speeds assembly of plastic inflatables
 LANGLEY-155 B66-10137 05

MANIFOLD
 Heated die facilitates tungsten forming
 LEWIS-25A B66-10047 05

Combustion chamber inlet manifold separates vapor from liquid
 M-FS-531 B66-10052 05

MANUAL CONTROL
 Fingertip current control facilitates use of arc welding gun
 MSC-289 B66-10092 05

Safety switch permits emergency bridge crane shutdown
 M-FS-549 B66-10168 05

MANUFACTURING
 Bellows design features low spring rate and long life
 MSC-521 B66-10190 05

MASS SPECTROMETER
 Highly sensitive solids mass spectrometer uses inert-gas ion source
 ERC-11 B66-10114 02

MASS SPECTRUM
 Highly sensitive solids mass spectrometer uses inert-gas ion source
 ERC-11 B66-10114 02

MATERIAL TESTING
 Hot-wire detector for chemically active materials used in gas chromatography
 MSC-269 B66-10139 03

MATHEMATICS
 Calculations enable optimum design of magnetic brake
 LEWIS-251 B66-10073 05

MEASURES
 Corrosion of metal samples rapidly measured
 NU-0041 B66-10140 03

MEASURING APPARATUS
 Special mount improves remote transducer accuracy
 LEWIS-269 B66-10021 01

Flowmeter measures low gas-flow rates
 M-FS-215 B66-10036 01

Cold cathode ionization gauge has rigid metal housing
 GSFC-445 B66-10041 01

Improved electrode paste provides reliable measurement of galvanic skin response
 MSC-146 B66-10049 04

Ferroelectric bolometer measures RF absolute power at submillimeter wavelengths
 GSFC-422 B66-10051 01

Calorimeter accurately measures thermal radiation energy
 LANGLEY-173 B66-10058 02

Transmission system isolates pressure transducer from severe environment
 WOO-239 B66-10064 01

Angular acceleration measured by deflection in sensing ring
 MSC-250 B66-10105 01

Mechanism continuously measures static and dynamic cable loads
 MSC-217 B66-10107 05

Variable-capacitance tachometer eliminates troublesome magnetic fields
 GSFC-435 B66-10126 01

Apparatus measures thermal conductivity of honeycomb-core panels
 LANGLEY-202 B66-10127 01

Sextant measures spacecraft altitude without gravitational reference
 MSC-200 B66-10143 02

Extendable mast used in one shot soil penetrometer
 JPL-685 B66-10146 05

Improved system measures output energy of pyrotechnic devices
 WOO-256 B66-10159 01

Transducer measures force in vacuum environment
 LEWIS-218 B66-10161 01

Coating permits use of strain gage in water and liquid hydrogen
 M-FS-594 B66-10192 01

Segmented ball valve is easy to open and close
 WOO-248 B66-10195 05

Device without electrical connections in tank measures liquid level
 WOO-235 B66-10198 01

Hand tool permits shrink sizing of assembled tubing
 MSC-504 B66-10239 05

SUBJECT INDEX

MOTOR SYSTEM

Strain gage network distinguishes between thermal and mechanical deformations GSFC-478	B66-10280	01	structures MSC-486	B66-10244	05
Extensometer automatically measures elongation in elastomers M-FS-517	B66-10284	05	MICROANALYSIS Standards for electron probe microanalysis of silicates prepared by convenient method GSFC-469	B66-10234	03
Vacuum test fixture improves leakage rate measurements MSC-271	B66-10286	01	MICROCIRCUIT Rugged microelectronic module package supports circuitry on heat sink MSC-81A	B66-10245	01
MEDICAL ELECTRONICS Phonocardiograph system monitors heart sounds MSC-185	B66-10154	04	MICROORGANISM Microorganisms detected by enzyme-catalyzed reaction JPL-782	B66-10117	04
MEDICAL EQUIPMENT Computer circuit calculates cardiac output MSC-274	B66-10006	01	MILLIMETER WAVE Ferroelectric bolometer measures RF absolute power at submillimeter wavelengths GSFC-422	B66-10051	01
MERCURY /METAL/ Flowmeter measures low gas-flow rates M-FS-215	B66-10036	01	MILLING MACHINE Depth indicator and stop aid machining to precise tolerances M-FS-553	B66-10149	05
METAL Strain gage network distinguishes between thermal and mechanical deformations GSFC-478	B66-10280	01	Mill profiler machines soft materials accurately M-FS-692	B66-10254	05
METAL BONDING Assembly jig assures reliable solar cell modules GSFC-455	B66-10040	05	MINIATURIZATION Subminiaturized gas chromatograph gives fast, efficient analysis JPL-735	B66-10182	01
METAL COATING Jig protects transistors from heat while tinning leads MSC-515	B66-10240	05	MIRROR Beam splitter used in dual filming technique MFS-501	B66-10072	02
METAL CORROSION Corrosion of metal samples rapidly measured NU-0041	B66-10140	03	Mount enables precision adjustment of optical-instrumentation mirror MSC-184	B66-10199	02
METAL FORMING Coiled sheet metal strip opens into tubular configuration GSFC-425	B66-10009	03	MOBILITY Floating device aligns blind connections MSC-256	B66-10007	05
Explosive force of Primacord grid forms large sheet metal parts M-FS-316	B66-10014	05	MODULATION TECHNIQUE Dual regulator controls two gases from a single reference MSC-227	B66-10167	05
Heated die facilitates tungsten forming LEWIS-25A	B66-10047	05	MODULE Solar cell submodule design facilitates assembly of lightweight arrays JPL-728	B66-10231	02
Electrical upsetting of metal sheet forms weld edge M-FS-720	B66-10248	05	MOLD Spray-on technique simplifies fabrication of complex thermal insulation blanket M-FS-497	B66-10053	03
METAL JOINT High pressure tube coupling requires no threads or flares MSC-600	B66-10285	05	MOLYBDENUM ALLOY Etching process mills PH 14-8 Mo alloy steel to precise tolerances MSC-270	B66-10110	03
METAL SURFACE Surfactant for dye-penetrant inspection is insensitive to liquid oxygen M-FS-475	B66-10131	03	MONITOR Capacitive system detects and locates fluid leaks M-FS-478	B66-10099	01
Portable sandblaster cleans small areas MSC-523	B66-10242	05	MONOPULSE ANTENNA Antenna configurations provide polarization diversity GSFC-74	B66-10066	01
Braze alloys used as temperature indicators NU-0063	B66-10274	01	MOTOR SYSTEM Electronic phase-locked-loop speed control system is stable JPL-SC-084	B66-10232	01
METAL WORKING Split glass tube assures quality in electron beam brazing M-FS-564	B66-10151	05	Compact actuator converts rotary to linear motion JPL-786	B66-10265	05
Device spot-laps spheres to very close tolerances JPL-SC-119	B66-10175	05			
Pressure vessels fabricated with high-strength wire and electroformed nickel M-FS-580	B66-10218	05			
Hollow needle used to cut metal honeycomb					

MULTILAYER STRUCTURE

SUBJECT INDEX

MULTILAYER STRUCTURE

Reflective insulator layers separated by bonded silica beads
MSC-215

B66-10070

03

MULTIVIBRATOR

Complementary monostable circuits achieve low power drain and high reliability
GSFC-433

B66-10179

01

MYLAR

O-rings with Mylar back-up provide high-pressure cryogenic seal
M-FS-603

B66-10278

05

N

NICKEL ALLOY

Cryogenic trap valve has no moving parts
M-FS-487

B66-10136

05

Nickel-base superalloys developed for high-temperature applications
LEWIS-226

B66-10222

03

NIOBIUM

Niobium thin films are superconductive in strong magnetic fields at low temperatures
JPL-SC-174

B66-10122

02

NITROGEN

Economical and maintenance-free gas system operates railroad switches
NU-0045

B66-10124

05

NITROGEN POLYMER

Flexible protective coatings made from silicon-nitrogen materials
M-FS-528

B66-10027

03

NOSE CONE

Colloidal suspension simulates linear dynamic pressure profile
WOO-266

B66-10214

05

NYLON

Nylon bit removes cork insulation without damage to substrate
MSC-381

B66-10152

05

Improved adhesive for cryogenic applications cures at room temperature
WOO-132

B66-10185

03

O

O-RING SEAL

Rubber-coated bellows improves vibration damping in vacuum lines
LEWIS-273

B66-10187

02

O-rings with Mylar back-up provide high-pressure cryogenic seal
M-FS-603

B66-10278

05

OMNIDIRECTIONAL ANTENNA

Omnidirectional antennas transmit and receive over large bandwidth
GSFC-436

B66-10133

01

OPACITY

Optically driven switch turn-off time reduced by opaque coatings
JPL-SC-107

B66-10141

01

OPTICAL EQUIPMENT

Electrodeless discharge lamp is easily started, has high stability
WOO-030

B66-10015

01

Improved carbon electrode reduces arc sputtering
MSC-219

B66-10026

01

Optical gyro pickoff operates at cryogenic temperatures
M-FS-407

B66-10128

01

Optically driven switch turn-off time reduced

by opaque coatings
JPL-SC-107

B66-10141 01

OPTICAL INSTRUMENT

Optical projectors simulate human eyes to establish operator's field of view
WOO-250

B66-10010 02

Mount enables precision adjustment of optical-instrumentation mirror
MSC-184

B66-10199 02

Optical device enables small detector to see large field of view
WOO-253

B66-10263 02

OPTICAL METHOD

Instrument quickly transposes ground reference target to eye level
MSC-275

B66-10061 05

OPTICAL PYROMETER

Ultraviolet photographic pyrometer used in rocket exhaust analysis
M-FS-499

B66-10095 02

OPTICAL SENSOR

Multicolor stroboscope pinpoints resonances in vibrating components
JPL-0033

B66-10223 01

OSCILLATOR

A conceptual design for squeeze film bearings
M-FS-573

B66-10226 05

OSCILLOGRAPH

Lamp automatically switches to new filament on burnout
M-FS-498

B66-10046 01

OUTPUT

Dual-voltage power supply has increased efficiency
LEWIS-107A

B66-10002 01

Automatic gain control circuit handles wide input range
MSC-166

B66-10089 01

Improved system measures output energy of pyrotechnic devices
WOO-256

B66-10159 01

OXIDATION

Tool provides constant purge during tube welding
MFS-547

B66-10093 05

OXIDE

Improved thermal insulation materials made of foamed refractory oxides
M-FS-735

B66-10288 03

OXYGEN APPARATUS

Oxygen-hydrogen torch is a small-scale steam generator
NU-0042

B66-10120 03

OXYGEN TREATMENT

Process reduces pore diameters to produce superior filters
WOO-093

B66-10037 03

P

PACKAGING

Rugged microelectronic module package supports circuitry on heat sink
MSC-81A

B66-10245 01

Critical parts are stored and shipped in environmentally controlled reusable container
M-FS-703

B66-10258 05

PAINT

Inexpensive infrared source improvised from flashlight
M-FS-494

B66-10096 02

SUBJECT INDEX

PNEUMATIC CONTROL

PARABOLIC REFLECTOR

Small, high-intensity flasher permits continuous close-in photography
 NU-0043 B66-10119 03

PARACHUTE

Nylon shock absorber prevents injury to parachute jumpers
 MSC-226 B66-10080 05

PARACHUTING INJURY

Nylon shock absorber prevents injury to parachute jumpers
 MSC-226 B66-10080 05

PATH

Copper foil provides uniform heat sink path
 MSC-262 B66-10004 02

PATIENT

Buoyant Stokes litter assembly used for sea rescue operations
 MSC-131 B66-10019 05

PENETROMETER

Extendable mast used in one shot soil penetrometer
 JPL-685 B66-10146 05

PENNING GAUGE

Rod and dish cathode improves Penning-type vacuum gauge
 GSFC-447 B66-10082 01

PERMEABILITY

New energy storage concept uses tapes
 LEWIS-239 B66-10098 02

PHASE DEMODULATOR

PN acquisition demodulator achieves automatic synchronization of a telemetry channel
 JPL-612 B66-10271 01

PHASE LOCK

Electronic phase-locked-loop speed control system is stable
 JPL-SC-084 B66-10232 01

PHASE-SHIFT KEYING

PN acquisition demodulator achieves automatic synchronization of a telemetry channel
 JPL-612 B66-10271 01

PHENOL RESIN

Insulation for cryogenic tanks has reduced thickness and weight
 M-FS-326 B66-10183 02

PHONOCARDIOGRAPHY

Phonocardiograph system monitors heart sounds
 MSC-185 B66-10154 04

PHOTODETECTOR

Sensor detects hydrocarbon oil contaminants in fluid lines
 M-FS-522 B66-10068 01

Optical device enables small detector to see large field of view
 WOO-253 B66-10263 02

PHOTOGRAPHIC APPARATUS

Beam splitter used in dual filming technique
 MFS-501 B66-10072 02

Ultraviolet photographic pyrometer used in rocket exhaust analysis
 M-FS-499 B66-10095 02

Small, high-intensity flasher permits continuous close-in photography
 NU-0043 B66-10119 03

PHOTOLYSIS

Polymer film exhibits thermal and radiation stability
 LANGLEY-100 B66-10043 03

PHOTOMETER

Scanning photometer system automatically determines atmospheric layer height
 MSC-245 B66-10170 01

PHOTOMETRY

PTFE-ALUMINUM films serve as neutral density filters
 LANGLEY-189 B66-10017 02

PHOTOMULTIPLIER

Plastic scintillator converts standard photomultiplier to ultraviolet range
 ERC-9 B66-10108 02

PHOTON

Offset lenses add versatility to phototypesetting machine
 HQ-9 B66-10173 02

PHOTON ABSORPTION

Optically driven switch turn-off time reduced by opaque coatings
 JPL-SC-107 B66-10141 01

PHOTOVOLTAGE

Cuprous selenide and sulfide form improved photovoltaic barriers
 WOO-212 B66-10025 01

PHYSICAL CHEMISTRY

Apparatus presents visual display of semiconductor surface characteristics
 JPL-665 B66-10200 01

PHYSIOLOGY

Computer circuit calculates cardiac output
 MSC-274 B66-10006 01

PIPE

Pipe cutting tool is useful in limited space
 MSC-36 B66-10102 05

Studies reveal effects of pipe bends on fluid flow cavitation
 M-FS-516 B66-10228 05

PIPELINE

Portable power tool machines weld joints in field
 M-FS-258 B66-10145 05

PLASMA ARC

Protective coating withstands high temperature in oxidizing atmosphere
 M-FS-529 B66-10044 03

PLASTIC

Corrosion of metal samples rapidly measured
 NU-0041 B66-10140 03

PLASTIC MATERIAL

Bench vise adapter grips tubing securely and safely
 MSC-279 B66-10056 05

Rotating mandrel speeds assembly of plastic inflatables
 LANGLEY-155 B66-10137 05

PLUG

Electron beam seals outer surfaces of porous bodies
 M-FS-562 B66-10033 03

Plugged hollow shaft makes fatigue-resistant shear pin
 LANGLEY-195 B66-10077 05

Expandable rubber plug seals openings for pressure testing
 NU-0048 B66-10229 05

PNEUMATIC CONTROL

Electropneumatic transducer automatically limits motor current
 LEWIS-253 B66-10160 01

PNEUMATIC EQUIPMENT

SUBJECT INDEX

PNEUMATIC EQUIPMENT

Pneumatic shutoff and time-delay valve
operates at controlled rate
M-FS-602 B66-10189 05

POLARIZATION CHARACTERISTICS

Antenna configurations provide polarization
diversity
GSFC-74 B66-10066 01

POLYMER

Polymer film exhibits thermal and radiation
stability
LANGLEY-100 B66-10043 03

Polymer deformation gauge measures thickness
change in tensile tests
JPL-745 B66-10147 01

POLYMETHYL METHACRYLATE

Small, high-intensity flasher permits
continuous close-in photography
NU-0043 B66-10119 03

POLYTETRAFLUOROETHYLENE

PTFE-ALUMINUM films serve as neutral density
filters
LANGLEY-189 B66-10017 02

Polytetrafluoroethylene lubricates ball
bearings in vacuum environment
M-FS-379 B66-10081 03

POLYURETHANE FOAM

Storage-stable foamable polyurethane is
activated by heat
LANGLEY-187 B66-10111 03

POROUS MATERIAL

Process reduces pore diameters to produce
superior filters
WOO-093 B66-10037 03

PORTABILITY

Seismometer designed for remote operation in
random orientation
JPL-320 B66-10085 01

Mount makes liquid nitrogen-cooled gamma ray
detector portable
LEWIS-259 B66-10103 01

Ultrasonic recording scanner used for
nondestructive weld inspection
M-FS-284 B66-10220 01

POSITIONING

Device facilitates centering of workpieces in
lathe chuck
M-FS-685 B66-10277 05

POSITIONING EQUIPMENT

Sheet metal strip unrolls to form circular
boom
GSFC-423 B66-10032 05

Thermal motor positions magnetometer sensors
ARC-51 B66-10078 05

Adjustable cutting guide aligns and positions
stacks of material
MSC-321 B66-10210 05

POTTING COMPOUND

Bismuth alloy potting seals aluminum connector
in cryogenic application
WOO-260 B66-10138 03

POWER EFFICIENCY

Circuit exhibits power efficiency greater
than 75 percent
MSC-254 B66-10034 01

Complementary monostable circuits achieve low
power drain and high reliability
GSFC-433 B66-10179 01

POWER SUPPLY

Low-power ring counter drives high-level

loads
GSFC-431 B66-10106 01

Economical and maintenance-free gas system
operates railroad switches
NU-0045 B66-10124 05

PRESSURE APPARATUS

Diffusion bonding makes strong seal at flanged
connector
M-FS-637 B66-10250 05

PRESSURE DISTRIBUTION

Calibrated clamp facilitates pressure
application
MSC-298 B66-10059 05

PRESSURE MEASUREMENT

Cold cathode ionization gauge has rigid metal
housing
GSFC-445 B66-10041 01

Transmission system isolates pressure
transducer from severe environment
WOO-239 B66-10064 01

Rod and dish cathode improves Penning-type
vacuum gauge
GSFC-447 B66-10082 01

Colloidal suspension simulates linear
dynamic pressure profile
WOO-266 B66-10214 05

PRESSURE REGULATOR

Ring valve responds to differential pressure
changes
WOO-247 B66-10022 05

Dual regulator controls two gases from a
single reference
MSC-227 B66-10167 05

Pressure seal ring may be effective over wide
temperature range
M-FS-486 B66-10211 05

Magnetic latches provide positive
overpressure control
NU-0057 B66-10279 05

PRESSURE TRANSDUCER

Special mount improves remote transducer
accuracy
LEWIS-269 B66-10021 01

Pressure transducers dynamically tested with
sinusoidal pressure generator
LEWIS-268 B66-10031 01

Transmission system isolates pressure
transducer from severe environment
WOO-239 B66-10064 01

PRESSURE TUBE

O-rings with Mylar back-up provide high-
pressure cryogenic seal
M-FS-603 B66-10278 05

PRESSURE VESSEL

Pressure vessels fabricated with high-strength
wire and electroformed nickel
M-FS-580 B66-10218 05

PRIMER

White primer permits a corrosion-resistant
coating of minimum weight
M-FS-304 B66-10207 03

PROGRAMMING

Fortran program flowchart is automatically
produced
M-FS-369 B66-10062 01

PROJECTION

Optical projectors simulate human eyes to
establish operator's field of view
WOO-250 B66-10010 02

SUBJECT INDEX

REENTRY CONDITION

R

Single projector accommodates slides of different size and format
GSFC-439 B66-10016 02

PROPELLANT TANK
Insulation for cryogenic tanks has reduced thickness and weight
M-FS-326 B66-10183 02

PROTECTION
Compact retractor protects cabling loops
M-FS-561 B66-10018 05

Seal surfaces protected during assembly
NU-0067 B66-10266 05

PROTECTIVE CLOTHING
Self-contained clothing system provides protection against hazardous environments
M-FS-536 B66-10201 05

PROTECTIVE COATING
Flexible protective coatings made from silicon-nitrogen materials
M-FS-528 B66-10027 03

Epoxy blanket protects milled part during explosive forming
M-FS-307 B66-10029 03

Protective coating withstands high temperature in oxidizing atmosphere
M-FS-529 B66-10044 03

Run-in with chemical additive protects gear surface
M-FS-548 B66-10069 05

Refractory coating protects intricate graphite elements from high-temperature hydrogen
NU-0027 B66-10084 01

Vapor grown silicon dioxide improves transistor base-collector junctions
GSFC-389 B66-10091 01

Coating permits use of strain gage in water and liquid hydrogen
M-FS-594 B66-10192 01

PULLEY
Mechanism continuously measures static and dynamic cable loads
MSC-217 B66-10107 05

PULSE CODE MODULATION /PCM/
PN acquisition demodulator achieves automatic synchronization of a telemetry channel
JPL-612 B66-10271 01

PULSE DURATION MODULATION /PDM/
Circuit exhibits power efficiency greater than 75 percent
MSC-254 B66-10034 01

PULSE FREQUENCY MODULATION /PFM/
Circuit exhibits power efficiency greater than 75 percent
MSC-254 B66-10034 01

PULSE MODULATION
Digitally controlled pulse-level discriminator operates over wide voltage range
GSFC-324 B66-10129 01

PUNCH
Forming tool improves quality of tubing flares
WOO-231 B66-10001 05

PYROTECHNICS
Improved system measures output energy of pyrotechnic devices
WOO-256 B66-10159 01

QUEUE
Queuing register uses fluid logic elements
M-FS-317 B66-10100 05

Q

RADIAL DISTRIBUTION

Radial coolant channels fabricated by simplified method
NU-0070 B66-10267 05

RADIATION DETECTOR

Mount makes liquid nitrogen-cooled gamma ray detector portable
LEWIS-259 B66-10103 01

Plastic scintillator converts standard photomultiplier to ultraviolet range
ERC-9 B66-10108 02

RADIATION EXPOSURE

Radiation used to temperature compensate semiconductor strain gages
LANGLEY-207 B66-10186 02

RADIATOR

Ultraviolet photographic pyrometer used in rocket exhaust analysis
M-FS-499 B66-10095 02

RADIO FREQUENCY

Auxiliary coil controls temperature of RF induction heater
GSFC-428 B66-10067 01

RADIO FREQUENCY DISCHARGE

Ferroelectric bolometer measures RF absolute power at submillimeter wavelengths
GSFC-422 B66-10051 01

RADIO RECEIVER

Automatic gain control circuit handles wide input range
MSC-166 B66-10089 01

RADIOACTIVITY

Radioactive tracer system detects oil contaminants in fluid lines
M-FS-512 B66-10090 03

RADIOLYSIS

Polymer film exhibits thermal and radiation stability
LANGLEY-100 B66-10043 03

RARE EARTH

Improved carbon electrode reduces arc sputtering
MSC-219 B66-10026 01

RARE GAS

Tool provides constant purge during tube welding
MFS-547 B66-10093 05

RECORDING INSTRUMENT

Tester periodically registers dc amplifier characteristics
MSC-190 B66-10148 01

Ultrasonic recording scanner used for nondestructive weld inspection
M-FS-284 B66-10220 01

RECTIFIER

Dual-voltage power supply has increased efficiency
LEWIS-107A B66-10002 01

Thin-film semiconductor rectifier has improved properties
MSC-207 B66-10012 01

REEL

Automatic reel controls filler wire in welding machines
MSC-416 B66-10236 05

REENTRY CONDITION

Colloidal suspension simulates linear dynamic pressure profile
WOO-266 B66-10214 05

REFERENCE SYSTEM

SUBJECT INDEX

REFERENCE SYSTEM

Instrument quickly transposes ground reference target to eye level
MSC-275 B66-10061 05

Multiple temperatures sampled using only one reference junction
GSFC-485 B66-10260 01

REFLECTOR
Reflective insulator layers separated by bonded silica beads
MSC-215 B66-10070 03

REFRACTORY MATERIAL
Refractory coating protects intricate graphite elements from high-temperature hydrogen
NU-0027 B66-10084 01

Fibers of newly developed refractory ceramics produced by improved process
WOO-169 B66-10196 03

Improved thermal insulation materials made of foamed refractory oxides
M-FS-735 B66-10288 03

REGULATOR
Electropneumatic transducer automatically limits motor current
LEWIS-253 B66-10160 01

REJECTION
Simple circuit provides reliable multiple signal average and reject capability
NU-0069 B66-10282 01

RELEASE DEVICE
Cylindrical claw clamp has quick release feature
M-FS-513 B66-10213 05

Fastener provides for bolt misalignment and quick release of flange
NU-0074 B66-10275 05

REMOTE CONTROL
Economical and maintenance-free gas system operates railroad switches
NU-0045 B66-10124 05

Electric arc heater is self starting
LANGLEY-208 B66-10230 03

Quick-closing valve is actuated by explosive discharge
ARC-55 B66-10233 05

Remotely controlled system couples and decouples large diameter pipes
NU-0062 B66-10276 05

RESISTANCE COEFFICIENT
Radiation used to temperature compensate semiconductor strain gages
LANGLEY-207 B66-10186 02

RESISTANCE HEATING
Electrical upsetting of metal sheet forms weld edge
M-FS-720 B66-10248 05

RESISTIVITY
Aluminum doping improves silicon solar cells
LEWIS-206 B66-10181 02

RESISTOR
Diffusion technique stabilizes resistor values
MSC-205 B66-10142 01

RESONANT FREQUENCY
Friction device damps linear motion of rotating shaft
WOO-214 B66-10030 05

Pressure transducers dynamically tested with sinusoidal pressure generator
LEWIS-268 B66-10031 01

RHENIUM

High temperature thermocouple operates in reduction atmosphere
NU-0046 B66-10134 01

RIGID MOUNTING

Compact actuator converts rotary to linear motion
JPL-786 B66-10265 05

RIGID STRUCTURE

Bellows design features low spring rate and long life
MSC-521 B66-10190 05

RING

Ring valve responds to differential pressure changes
WOO-247 B66-10022 05

Angular acceleration measured by deflection in sensing ring
MSC-250 B66-10105 01

Intermediate rotating ring improves reliability of dynamic shaft seal
M-FS-575 B66-10197 05

Pressure seal ring may be effective over wide temperature range
M-FS-486 B66-10211 05

Electron beam welding of copper-MONEL facilitated by circular magnetic shields
M-FS-569 B66-10215 05

Flow ring valve is simple, quick-acting
M-FS-752 B66-10255 05

Differential expansion provides pressure for diffusion bonding of large diameter rings
M-FS-588 B66-10269 05

O-rings with Mylar back-up provide high-pressure cryogenic seal
M-FS-603 B66-10278 05

ROCKET EXHAUST

Ultraviolet photographic pyrometer used in rocket exhaust analysis
M-FS-499 B66-10095 02

ROD

Mounting facilitates removal and installation of flame-detector rods
M-FS-555 B66-10150 05

ROOM TEMPERATURE

Improved adhesive for cryogenic applications cures at room temperature
WOO-132 B66-10185 03

ROTATING BODY

Cryostat modified to aid rotating beam fatigue test
M-FS-435 B66-10083 03

ROTATING SHAFT

Friction device damps linear motion of rotating shaft
WOO-214 B66-10030 05

Noncontacting transducer measures shaft torque
M-FS-474 B66-10048 01

Intermediate rotating ring improves reliability of dynamic shaft seal
M-FS-575 B66-10197 05

ROTATION

Ring counter circuit switches multiphase motor direction of rotation
JPL-SC-166 B66-10101 01

Compact actuator converts rotary to linear motion
JPL-786 B66-10265 05

SUBJECT INDEX

SENSOR

ROTOR BLADE

Simple key locks turbine rotor blades
WOO-103 B66-10023 05

ROTOR SYSTEM

Switching mechanism senses angular acceleration
GSFC-462 B66-10158 01

RUBBER

Rubber-coated bellows improves vibration damping in vacuum lines
LEWIS-273 B66-10187 02

S

SAFETY DEVICE

Single connector provides safety fuses for multiple lines
MSC-199 B66-10050 01

Nylon shock absorber prevents injury to parachute jumpers
MSC-226 B66-10080 05

Dispenser leak-tests and sterilizes rubber gloves
MSC-285 B66-10166 03

Safety switch permits emergency bridge crane shutdown
M-FS-549 B66-10168 05

Lifting clamp positively grips structural shapes
M-FS-593 B66-10176 05

Self-inflating lifevest stores in small package
MSC-5A B66-10184 04

Body-fitted harness provides safe and easy component handling
M-FS-533 B66-10202 05

Adjustable cutting guide aligns and positions stacks of material
MSC-321 B66-10210 05

Key-locked guard prevents accidental switch actuation
MSC-419 B66-10235 05

Lathe chuck key incorporates safety feature
MSC-506 B66-10243 05

Magnetic latches provide positive overpressure control
NU-0057 B66-10279 05

SAFETY FACTOR

Self-contained clothing system provides protection against hazardous environments
M-FS-536 B66-10201 05

SAMPLING DEVICE

Multiple temperatures sampled using only one reference junction
GSFC-485 B66-10260 01

SCANNING DEVICE

Scanning photometer system automatically determines atmospheric layer height
MSC-245 B66-10170 01

Ultrasonic recording scanner used for nondestructive weld inspection
M-FS-284 B66-10220 01

Multicolor stroboscope pinpoints resonances in vibrating components
JPL-0033 B66-10223 01

SCINTILLATOR

Plastic scintillator converts standard photomultiplier to ultraviolet range
ERC-9 B66-10108 02

SEALANT

Liquid trap seals thermocouple leads
M-FS-688 B66-10212 05

SEALING

Electron beam seals outer surfaces of porous bodies
M-FS-562 B66-10033 03

Rotating mandrel speeds assembly of plastic inflatables
LANGLEY-155 B66-10137 05

Bismuth alloy potting seals aluminum connector in cryogenic application
WOO-260 B66-10138 03

Intermediate rotating ring improves reliability of dynamic shaft seal
M-FS-575 B66-10197 05

Special tool seals conductors with combination of plastic sleeves
M-FS-579 B66-10209 05

Pressure seal ring may be effective over wide temperature range
M-FS-486 B66-10211 05

Soft-seal valve holds hazardous fluids safely
LEWIS-275 B66-10216 05

Pressure-welded flange assembly provides leaktight seal at reduced bolt loads
M-FS-640 B66-10247 05

Fluid damping reduces bellows seal fatigue failures
M-FS-565 B66-10249 05

Diffusion bonding makes strong seal at flanged connector
M-FS-637 B66-10250 05

Seal surfaces protected during assembly
NU-0067 B66-10266 05

SEISMOMETER

Seismometer designed for remote operation in random orientation
JPL-320 B66-10085 01

SELENIDE

Cuprous selenide and sulfide form improved photovoltaic barriers
WOO-212 B66-10025 01

SEMICONDUCTOR

Single-crystal semiconductor films grown on foreign substrates
WOO-076 B66-10225 01

SEMICONDUCTOR DEVICE

Thin-film semiconductor rectifier has improved properties
MSC-207 B66-10012 01

Radiation used to temperature compensate semiconductor strain gages
LANGLEY-207 B66-10186 02

Apparatus presents visual display of semiconductor surface characteristics
JPL-665 B66-10200 01

SENSOR

Control system maintains selected liquid level
M-FS-470 B66-10039 01

Sensor detects hydrocarbon oil contaminants in fluid lines
M-FS-522 B66-10068 01

Thermal motor positions magnetometer sensors
ARC-51 B66-10078 05

New television camera eliminates vidicon tube
M-FS-472 B66-10112 01

SEPARATOR

SUBJECT INDEX

Optical gyro pickoff operates at cryogenic temperatures M-FS-407	B66-10128	01	silicates prepared by convenient method GSFC-469	B66-10234	03
SEPARATOR Automatic fluid separator supplies own driving power WOO-085	B66-10008	02	SILICON Aluminum doping improves silicon solar cells LEWIS-206	B66-10181	02
Tool separates sleeve-type unions without heat MSC-497	B66-10253	05	SILICON ALLOY Brazing process using Al-Si filler alloy reliably bonds aluminum parts MSC-448	B66-10241	05
SEQUENTIAL DETECTION Binary sequence detector uses minimum number of decision elements JPL-673	B66-10264	01	SILICON OXIDE Reflective insulator layers separated by bonded silica beads MSC-215	B66-10070	03
SEXTANT Sextant measures spacecraft altitude without gravitational reference MSC-200	B66-10143	02	Vapor grown silicon dioxide improves transistor base-collector junctions GSFC-389	B66-10091	01
SHAFT Plugged hollow shaft makes fatigue-resistant shear pin LANGLEY-195	B66-10077	05	SILICON POLYMER Flexible protective coatings made from silicon-nitrogen materials M-FS-528	B66-10027	03
Torque wrench allows readings from inaccessible locations M-FS-598	B66-10204	05	Silazane polymers show promise for high-temperature application M-FS-466	B66-10194	03
Extensometer automatically measures elongation in elastomers M-FS-517	B66-10284	05	Substituted silane-diol polymers have improved thermal stability M-FS-469	B66-10259	03
SHEET METAL Sheet metal strip unrolls to form circular boom GSFC-423	B66-10032	05	SILICON TRANSISTOR Vapor grown silicon dioxide improves transistor base-collector junctions GSFC-389	B66-10091	01
Bellows design features low spring rate and long life MSC-521	B66-10190	05	SILICONE RUBBER Copper foil provides uniform heat sink path MSC-262	B66-10004	02
Electrical upsetting of metal sheet forms weld edge M-FS-720	B66-10248	05	Split glass tube assures quality in electron beam brazing M-FS-564	B66-10151	05
SHELL Fiberglass container shells form contamination-free storage units WOO-275	B66-10217	05	SILVER Gelatin coated electrodes allow prolonged bioelectronic measurements MSC-153	B66-10088	01
SHOCK Tensile-strength apparatus applies high strain-rate loading with minimum shock JPL-28	B66-10063	05	SIMULATOR Optical projectors simulate human eyes to establish operator's field of view WOO-250	B66-10010	02
SHOCK ABSORBER Nylon shock absorber prevents injury to parachute jumpers MSC-226	B66-10080	05	SINUSOID Pressure transducers dynamically tested with sinusoidal pressure generator LEWIS-268	B66-10031	01
SHUTTER Magnetic latches provide positive overpressure control NU-0057	B66-10279	05	SKIN /BIOL/ Integral skin electrode for electrocardiography is expendable MSC-299	B66-10118	04
SIGNAL DISCRIMINATOR Digitally controlled pulse-level discriminator operates over wide voltage range GSFC-324	B66-10129	01	SKIN RESISTANCE Improved electrode paste provides reliable measurement of galvanic skin response MSC-146	B66-10049	04
Simple circuit provides reliable multiple signal average and reject capability NU-0069	B66-10282	01	SLEEVE Noncontacting transducer measures shaft torque M-FS-474	B66-10048	01
SIGNAL PROCESSING System proportions fluid-flow in response to demand signals GSFC-457	B66-10094	01	Single connector provides safety fuses for multiple lines MSC-199	B66-10050	01
SILAZANE Silazane polymers show promise for high-temperature application M-FS-466	B66-10194	03	Insert sleeve prevents tube soldering contamination MSC-552	B66-10238	05
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STANDARDIZATION

SMOOTHING

Device spot-laps spheres to very close tolerances
JPL-SC-119 B66-10175 05

SOIL

Microorganisms detected by enzyme-catalyzed reaction
JPL-782 B66-10117 04

Extendable mast used in one shot soil penetrometer
JPL-685 B66-10146 05

SOLAR CELL

Assembly jig assures reliable solar cell modules
GSFC-455 B66-10040 05

Aluminum doping improves silicon solar cells
LEWIS-206 B66-10181 02

Solar cell submodule design facilitates assembly of lightweight arrays
JPL-728 B66-10231 02

SOLDERED JOINT

Soldering tool heats workpieces and applies solder in one operation
LEWIS-247 B66-10115 05

Telescoping of instrumentation tubing eliminates swaging
M-FS-546 B66-10116 05

SOLDERING

Assembly jig assures reliable solar cell modules
GSFC-455 B66-10040 05

Soldering tool heats workpieces and applies solder in one operation
LEWIS-247 B66-10115 05

Fixture aids soldering of electronic components on circuit board
ARC-56 B66-10162 01

Soldering iron temperature is automatically reduced
ARC-57 B66-10203 01

Insert sleeve prevents tube soldering contamination
MSC-552 B66-10238 05

Modified soldering iron speeds cutting of synthetic materials
M-FS-725 B66-10246 05

SOLENOID

Circuit exhibits power efficiency greater than 75 percent
MSC-254 B66-10034 01

SOLID LUBRICANT

Fluoride coatings make effective lubricants in molten sodium environment
LEWIS-229 B66-10005 03

Polytetrafluoroethylene lubricates ball bearings in vacuum environment
M-FS-379 B66-10081 03

Solid-film lubricant is effective at high temperatures in vacuum
LEWIS-228 B66-10087 03

SOLID STATE DEVICE

Ring counter circuit switches multiphase motor direction of rotation
JPL-SC-166 B66-10101 01

New television camera eliminates vidicon tube
M-FS-472 B66-10112 01

Optical gyro pickoff operates at cryogenic temperatures
M-FS-407 B66-10128 01

Solid state thermostat has integral probe and circuitry
M-FS-434 B66-10193 01

SOLID SUSPENSION

Colloidal suspension simulates linear dynamic pressure profile
WOO-266 B66-10214 05

SOLVENT

Surfactant for dye-penetrant inspection is insensitive to liquid oxygen
M-FS-475 B66-10131 03

SPACECRAFT ENVIRONMENT

Phonocardiograph system monitors heart sounds
MSC-185 B66-10154 04

SPARK PHOTOGRAPHY

Small, high-intensity flasher permits continuous close-in photography
NU-0043 B66-10119 03

SPHERE

Device spot-laps spheres to very close tolerances
JPL-SC-119 B66-10175 05

SPLINE FUNCTION

Flexible coiled spline securely joins mating cylinders
WOO-270 B66-10172 05

SPOT WELDING

Shoulder adapter steadies spot welding gun
M-FS-321 B66-10076 05

SPRAY

Spray-on technique simplifies fabrication of complex thermal insulation blanket
M-FS-497 B66-10053 03

SPRING

Mounting improves heat-sink contact with beryllia washer
MSC-194 B66-10144 01

Device facilitates centering of workpieces in lathe chuck
M-FS-685 B66-10277 05

SPUTTERING

Improved carbon electrode reduces arc sputtering
MSC-219 B66-10026 01

SQUIB

Quick-closing valve is actuated by explosive discharge
ARC-55 B66-10233 05

STABILITY

Cuprous selenide and sulfide form improved photovoltaic barriers
WOO-212 B66-10025 01

Binary fluid amplifier solves stability and load problems
ERC-15 B66-10177 01

STAINLESS STEEL

Cold cathode ionization gauge has rigid metal housing
GSFC-445 B66-10041 01

Telescoping of instrumentation tubing eliminates swaging
M-FS-546 B66-10116 05

Differential expansion provides pressure for diffusion bonding of large diameter rings
M-FS-588 B66-10269 05

STANDARDIZATION

Standards for electron probe microanalysis of silicates prepared by convenient method
GSFC-469 B66-10234 03

STARTER

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STARTER

Electric arc heater is self starting
 LANGLEY-208 B66-10230 03

STEAM GENERATOR

Oxygen-hydrogen torch is a small-scale
 steam generator
 NU-0042 B66-10120 03

STEEL

Etching process mills PH 14-8 Mo alloy
 steel to precise tolerances
 MSC-270 B66-10110 03

Aluminum/steel wire composite plates exhibit
 high tensile strength
 M-FS-401 B66-10262 05

STEEL STRUCTURE

Computer program simplifies selection of
 structural steel columns
 NU-0044 B66-10097 01

STEREOSCOPIC PHOTOGRAPHY

Screen of cylindrical lenses produces
 stereoscopic television pictures
 M-FS-273 B66-10086 02

STERILIZATION

Dispenser leak-tests and sterilizes rubber
 gloves
 MSC-285 B66-10166 03

STORAGE STABILITY

Storage-stable foamable polyurethane is
 activated by heat
 LANGLEY-187 B66-10111 03

STORAGE TANK

Capacitive system detects and locates fluid
 leaks
 M-FS-478 B66-10099 01

STORAGE UNIT

Critical parts are stored and shipped in
 environmentally controlled reusable container
 M-FS-703 B66-10258 05

STRAIN GAUGE

Mechanism continuously measures static and
 dynamic cable loads
 MSC-217 B66-10107 05

Radiation used to temperature compensate
 semiconductor strain gages
 LANGLEY-207 B66-10186 02

Coating permits use of strain gage in water
 and liquid hydrogen
 M-FS-594 B66-10192 01

Strain gage network distinguishes between
 thermal and mechanical deformations
 GSFC-478 B66-10280 01

STRAIN GAUGE ACCELEROMETER

Angular acceleration measured by deflection
 in sensing ring
 MSC-250 B66-10105 01

STRAIN RATE

Tensile-strength apparatus applies high
 strain-rate loading with minimum shock
 JPL-28 B66-10063 05

STRESS DISTRIBUTION

Resilient clamp holds fuel cell stack through
 thermal cycle
 MSC-313 B66-10035 05

STRETCHER

Buoyant Stokes litter assembly used for sea
 rescue operations
 MSC-131 B66-10019 05

STRUCTURAL DESIGN

A conceptual design for squeeze film bearings
 M-FS-573 B66-10226 05

Solar cell submodule design facilitates
 assembly of lightweight arrays
 JPL-728 B66-10231 02

STRUCTURAL ENGINEERING

Lifting clamp positively grips structural
 shapes
 M-FS-593 B66-10176 05

STYROFOAM

Mill profiler machines soft materials
 accurately
 M-FS-692 B66-10254 05

Fixed vacuum plate clamps styrofoam for
 machining
 M-FS-683 B66-10283 05

SUBCOOLING

Complementary system vaporizes subcooled
 liquid, improves transformer efficiency
 M-FS-550 B66-10045 02

SUBMILLIMETER WAVE

Ferroelectric bolometer measures RF absolute
 power at submillimeter wavelengths
 GSFC-422 B66-10051 01

SUBSTRATE

Single-crystal semiconductor films grown on
 foreign substrates
 WOO-076 B66-10225 01

SUCTION

Calibrated clamp facilitates pressure
 application
 MSC-298 B66-10059 05

SULFIDE

Cuprous selenide and sulfide form improved
 photovoltaic barriers
 WOO-212 B66-10025 01

SUPERALLOY

Nickel-base superalloys developed for high-
 temperature applications
 LEWIS-226 B66-10222 03

SUPERCONDUCTOR

Niobium thin films are superconductive in
 strong magnetic fields at low temperatures
 JPL-SC-174 B66-10122 02

SURFACE CHEMISTRY

Apparatus presents visual display of
 semiconductor surface characteristics
 JPL-665 B66-10200 01

SURFACE IONIZATION

Highly sensitive solids mass spectrometer
 uses inert-gas ion source
 ERC-11 B66-10114 02

SURFACE TREATMENT

Device spot-laps spheres to very close
 tolerances
 JPL-SC-119 B66-10175 05

Dry film lubricant is effective at extreme
 loads
 M-FS-628 B66-10256 03

Seal surfaces protected during assembly
 NU-0067 B66-10266 05

SURFACTANT

Surfactant for dye-penetrant inspection is
 insensitive to liquid oxygen
 M-FS-475 B66-10131 03

SURVIVAL

Self-inflating lifevest stores in small
 package
 MSC-5A B66-10184 04

SWAGING

Telescoping of instrumentation tubing
 eliminates swaging
 M-FS-546 B66-10116 05

SUBJECT INDEX

TEST CHAMBER

Low power heating element provides thermal control during swaging operations
M-FS-457 B66-10206 05

SWITCH
Economical and maintenance-free gas system operates railroad switches
NU-0045 B66-10124 05

Optically driven switch turn-off time reduced by opaque coatings
JPL-SC-107 B66-10141 01

Switching mechanism senses angular acceleration
GSFC-462 B66-10158 01

Safety switch permits emergency bridge crane shutdown
M-FS-549 B66-10168 05

Soldering iron temperature is automatically reduced
ARC-57 B66-10203 01

Key-locked guard prevents accidental switch actuation
MSC-419 B66-10235 05

Magnetically operated limit switch has improved reliability, minimizes arcing
MSC-422 B66-10270 01

SWITCHING
Lamp automatically switches to new filament on burnout
M-FS-498 B66-10046 01

SWITCHING CIRCUIT
Tester periodically registers dc amplifier characteristics
MSC-190 B66-10148 01

SWITCHING FUNCTION
Exclusive-or logic circuit has useful properties
LANGLEY-214 B66-10272 01

SYSTEM FAILURE
Safety switch permits emergency bridge crane shutdown
M-FS-549 B66-10168 05

Simplified circuit corrects faults in parallel binary information channels
JPL-SC-090 B66-10261 01

T

TACHOMETER
Variable-capacitance tachometer eliminates troublesome magnetic fields
GSFC-435 B66-10126 01

TANK
Device without electrical connections in tank measures liquid level
WOO-235 B66-10198 01

TAPE
New energy storage concept uses tapes
LEWIS-239 B66-10098 02

TAPE RECORDER
Electronic phase-locked-loop speed control system is stable
JPL-SC-084 B66-10232 01

TEFLON
Insert sleeve prevents tube soldering contamination
MSC-552 B66-10238 05

TELEMETRY
Solid state thermostat has integral probe and circuitry
M-FS-434 B66-10193 01

TELEVISION CAMERA
Screen of cylindrical lenses produces stereoscopic television pictures
M-FS-273 B66-10086 02

Circular, explosion-proof lamp provides uniform illumination
MSC-382 B66-10156 02

TEMPERATURE CONTROL
Auxiliary coil controls temperature of RF induction heater
GSFC-428 B66-10067 01

Control system maintains compartment at constant temperature
JPL-SC-145 B66-10188 05

Soldering iron temperature is automatically reduced
ARC-57 B66-10203 01

High-speed furnace uses infrared radiation for controlled brazing
NU-0047 B66-10268 02

TEMPERATURE EFFECT
Coiled sheet metal strip opens into tubular configuration
GSFC-425 B66-10009 03

Angular acceleration measured by deflection in sensing ring
MSC-250 B66-10105 01

TEMPERATURE FIELD
Hydrogen-atmosphere induction furnace has increased temperature range
LEWIS-153 B66-10055 05

TEMPERATURE INDICATOR
Brazing alloys used as temperature indicators
NU-0063 B66-10274 01

TEMPERATURE MEASUREMENT
Miniature bioelectric device accurately measures and telemeters temperature
ARC-52 B66-10057 01

Multiple temperatures sampled using only one reference junction
GSFC-485 B66-10260 01

Strain gage network distinguishes between thermal and mechanical deformations
GSFC-478 B66-10280 01

TENSILE STRENGTH
Mechanism continuously measures static and dynamic cable loads
MSC-217 B66-10107 05

Aluminum/steel wire composite plates exhibit high tensile strength
M-FS-401 B66-10262 05

TENSILE TESTING MACHINE
Tensile-strength apparatus applies high strain-rate loading with minimum shock
JPL-28 B66-10063 05

TEST CHAMBER
Materials physically tested in variable-environment chamber
JPL-789 B66-10130 01

Improved system measures output energy of pyrotechnic devices
WOO-256 B66-10159 01

Expandable rubber plug seals openings for pressure testing
NU-0048 B66-10229 05

Vacuum test fixture improves leakage rate measurements
MSC-271 B66-10286 01

TEST EQUIPMENT

SUBJECT INDEX

TEST EQUIPMENT

Pressure transducers dynamically tested with
sinusoidal pressure generator
LEWIS-268 B66-10031 01

Extendable mast used in one shot soil
penetrometer
JPL-685 B66-10146 05

Dispenser leak-tests and sterilizes rubber
gloves
MSC-285 B66-10166 03

TEST METHOD

Vibration tests on vidicons made by improved
method
JPL-SC-115 B66-10042 01

THERMAL EFFECT

Resilient clamp holds fuel cell stack through
thermal cycle
MSC-313 B66-10035 05

THERMAL ENERGY

Polymer film exhibits thermal and radiation
stability
LANGLEY-100 B66-10043 03

THERMAL EXPANSION

Differential expansion provides pressure for
diffusion bonding of large diameter rings
M-FS-588 B66-10269 05

THERMAL INSULATION

Aluminized fiber glass insulation conforms
to curved surfaces
M-FS-477 B66-10024 03

Spray-on technique simplifies fabrication of
complex thermal insulation blanket
M-FS-497 B66-10053 03

Insulation for cryogenic tanks has reduced
thickness and weight
M-FS-326 B66-10183 02

Improved thermal insulation materials made of
foamed refractory oxides
M-FS-735 B66-10288 03

THERMAL POWER

Thermal motor positions magnetometer sensors
ARC-51 B66-10078 05

THERMAL PROPERTY

Copper foil provides uniform heat sink path
MSC-262 B66-10004 02

THERMAL RADIATION

Calorimeter accurately measures thermal
radiation energy
LANGLEY-173 B66-10058 02

Chromium oxide coatings improve thermal
emissivity of alumina
WOO-263 B66-10227 03

THERMISTOR

Solid state thermostat has integral probe and
circuitry
M-FS-434 B66-10193 01

THERMOCONDUCTIVITY

Apparatus measures thermal conductivity of
honeycomb-core panels
LANGLEY-202 B66-10127 01

THERMOCOUPLE

Compound improves thermal interface between
thermocouple and sensed surface
NU-0028 B66-10121 02

Liquid trap seals thermocouple leads
M-FS-688 B66-10212 05

Multiple temperatures sampled using only one
reference junction
GSFC-485 B66-10260 01

THERMOCOUPLE PYROMETER

High temperature thermocouple operates
in reduction atmosphere
NU-0046 B66-10134 01

THERMOSTABILITY

Substituted silane-diol polymers have
improved thermal stability
M-FS-469 B66-10259 03

THERMOSTAT

Solid state thermostat has integral probe and
circuitry
M-FS-434 B66-10193 01

THIN FILM

Thin-film semiconductor rectifier has improved
properties
MSC-207 B66-10012 01

Thin carbon film serves as UV bandpass filter
ERC-8 B66-10060 02

THRESHOLD DETECTOR

Digitally controlled pulse-level discriminator
operates over wide voltage range
GSFC-324 B66-10129 01

TIME DELAY

Pneumatic shutoff and time-delay valve
operates at controlled rate
M-FS-602 B66-10189 05

TIME RESPONSE

Optically driven switch turn-off time reduced
by opaque coatings
JPL-SC-107 B66-10141 01

TIN

Jig protects transistors from heat while
tinning leads
MSC-515 B66-10240 05

TOOL

Improved tool easily removes brazed tube
connectors
MSC-263 B66-10003 05

Torque wrench designed for restricted areas
LEWIS-246 B66-10011 05

Bench vise adapter grips tubing securely and
safely
MSC-279 B66-10056 05

Shoulder adapter steadies spot welding gun
M-FS-321 B66-10076 05

Tool provides constant purge during tube
welding
MFS-547 B66-10093 05

Hand drill adapter limits holes to desired
depth
MSC-346 B66-10123 05

Device spot-laps spheres to very close
tolerances
JPL-SC-119 B66-10175 05

Torque wrench allows readings from
inaccessible locations
M-FS-598 B66-10204 05

Tool enables proper mating of accelerometer
and cable connector
M-FS-611 B66-10208 05

Special tool seals conductors with combination
of plastic sleeves
M-FS-579 B66-10209 05

Automatic reel controls filler wire in
welding machines
MSC-416 B66-10236 05

Adjustable knife cuts honeycomb material to
specified depth
MSC-475 B66-10237 05

SUBJECT INDEX

TURBOPUMP

Hand tool permits shrink sizing of assembled tubing
MSC-504 B66-10239 05

Portable sandblaster cleans small areas
MSC-523 B66-10242 05

Hollow needle used to cut metal honeycomb structures
MSC-486 B66-10244 05

Modified soldering iron speeds cutting of synthetic materials
M-FS-725 B66-10246 05

TORCH
Oxygen-hydrogen torch is a small-scale steam generator
NU-0042 B66-10120 03

Argon purge gas cooled by chill box
M-FS-560 B66-10153 02

TORQUE
Torque wrench designed for restricted areas
LEWIS-246 B66-10011 05

Modified power tool rapidly drives series torque bolts
MSC-221 B66-10054 05

T-handle wrench has torque-limiting action
MSC-280 B66-10065 05

Torque wrench allows readings from inaccessible locations
M-FS-598 B66-10204 05

TORQUE MEASURING APPARATUS
Noncontacting transducer measures shaft torque
M-FS-474 B66-10048 01

TORSION
Resilient clamp holds fuel cell stack through thermal cycle
MSC-313 B66-10035 05

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M-FS-512 B66-10090 03

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M-FS-474 B66-10048 01

Apparatus measures thermal conductivity of honeycomb-core panels
LANGLEY-202 B66-10127 01

Electropneumatic transducer automatically limits motor current
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Transducer measures force in vacuum environment
LEWIS-218 B66-10161 01

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WOO-235 B66-10198 01

Wide-range instrument monitors flow rates of chemically active fluids
MSC-186 B66-10205 01

TRANSFER FUNCTION
Cryogenic liquid transfer system reduces residual boiloff
LEWIS-274 B66-10157 02

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Complementary system vaporizes subcooled liquid, improves transformer efficiency
M-FS-550 B66-10045 02

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LEWIS-269 B66-10021 01

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GSFC-431 B66-10106 01

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MSC-515 B66-10240 05

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M-FS-468 B66-10113 01

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MSC-255 B66-10038 01

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GSFC-425 B66-10009 03

Tool provides constant purge during tube welding
MFS-547 B66-10093 05

Plastic scintillator converts standard photomultiplier to ultraviolet range
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WOO-231 B66-10001 01

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NU-0019 B66-10026 01

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M-FS-546 B66-10116 05

Aluminum oxide filler prevents obstructions in tubing during welding
MSC-222 B66-10125 05

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M-FS-564 B66-10151 05

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MSC-504 B66-10239 05

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MSC-497 B66-10253 05

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MSC-600 B66-10285 05

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M-FS-284 B66-10220 01

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LEWIS-245 B66-10165 03

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MSC-271 B66-10286 01

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B66-10068	01	M-FS-522
B66-10069	05	M-FS-548
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B66-10111	03	LANGLEY-187
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B66-10113	01	M-FS-468
B66-10114	02	ERC-11
B66-10115	05	LEWIS-247
B66-10116	05	M-FS-546
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B66-10120	03	NU-0042
B66-10121	02	NU-0028
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B66-10127	01	LANGLEY-202	B66-10215	05	M-FS-569
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B66-10129	01	GSFC-324	B66-10217	05	WOO-275
B66-10130	01	JPL-789	B66-10218	05	M-FS-580
B66-10131	03	M-FS-475	B66-10219	05	GSFC-467
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B66-10146	05	JPL-685	B66-10234	03	GSFC-469
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B66-10171	05	M-FS-586	B66-10259	03	M-FS-469
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B66-10174	05	M-FS-592	B66-10262	05	M-FS-401
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B66-10188	05	JPL-SC-145	B66-10276	05	NU-0062
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